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ABSTRACT

Documenting the processes and procedures, this report reviews phases of development, testing, and revision of 100 modules in a set of performance-based teacher education (PBTE) curricular materials. The first of two chapters discusses the need to develop a professional development program for vocational education teachers. A two-phase process is described: phase 1--identification of performance requirements of conventional program teachers; and phase 2--identification of performance requirements for cooperative program teacher coordinators. The findings are the origin of 384 performance elements and a set of related performance oriented general objectives. Chapter 2, divided into 7 sections, discusses curricular development, testing, and implementation. Section 1 describes the cooperation of institution/agency representatives in module development. Section 2 examines the preliminary module testing and results. Module revision procedures are outlined in section 3. Section 4 summarizes the advanced testing design and procedures. The fifth section provides model publication background. Module refinement, based on advanced testing feedback and publisher needs, is described in section 6. The final section reviews dissemination activities. Appendixes contain samples of the cooperative development stage module, data collection and synthesis forms, preliminary and advanced test versions, and revision procedures/quality control devices, and module titles and associated performance elements. (Volume 2 of the final report, which is a report of research, and a module development handbook are available as separate documents--see note.) (CSS)

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RESEARCH AND DEVELOPMENT SERIES NO. 139

PERFORMANCE–BASED PROFESSIONAL EDUCATION CURRICULA

Final Report
Volume I
Curricula Development

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U.S. DEPARTMENT OF HEALTH,
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NATIONAL INSTITUTE OF
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FOREWORD

The Center's Performance-Based Teacher Education (PBTE) Curricula are making significant contributions toward improvement of both preservice and inservice preparation of secondary and post-secondary vocational teachers. By focusing upon essential professional teacher competencies identified through research, these curricular materials are providing the basis for designing and implementing relevant teacher training programs to meet a variety of institutional, organizational, and individual needs in all occupational areas.

The Center's performance-based curricular materials consist of: 100 PBTE learning packages (modules), each of which focuses upon one or more previously identified teacher competencies, *Student Guide to Using Performance-Based Teacher Education Materials*, *Resource Person Guide to Using Performance-Based Teacher Education Materials*, and *Module Development Handbook*. These products are, by reference only, a part of this final report (see outside back cover of sample module in Volume I, Appendix H for a complete listing of all 100 module titles). Two related Center products, *Guide to Implementation of Performance-Based Teacher Education* and *Performance-Based Teacher Education: The State of the Art--General Education and Vocational Education* were developed under the project "National Institute for Performance-Based Teacher Education" funded through a separate grant from the U.S. Office of Education (EPDA).

Volume I (Curricula Development) of this final report documents the processes and procedures utilized in the several phases of development, testing, and revision of the 100 modules. Appreciation is extended to Lois G. Harrington and James B. Hamilton for drafting the major portions of this volume.

The Center's PBTE curricular materials are products of a sustained research and development effort by The Center's Program for Professional Development in Vocational Education. Many individuals, institutions, and agencies participated with The Center and have made contributions to the systematic development, testing, revision, and refinement of these very significant training materials.

Special recognition for individual roles in the direction, development, coordination of testing, revision, and refinement of the materials is extended to the following program staff: James B. Hamilton, Program Director; Robert E. Norton, Associate Program Director; Glen E. Fardig, Specialist; Lois G. Harrington, Program Associate; and Karen M. Quinn, Program Associate. Contributions made by the many former program staff toward developmental versions of the materials are also acknowledged and appreciated. Calvin J. Cotrell directed the vocational teacher competency studies upon which the 100 modules are based and also directed the curriculum development effort from 1971-1972. Curtis R. Finch provided leadership for the program from 1972-1974.

Appreciation is extended to all those outside The Center (consultants, field site coordinators, teacher educators, teachers and others) who contributed so generously in various phases of the total effort. Early versions of the materials were developed by The Center in cooperation with the vocational teacher education faculties at Oregon State University and at the University of Missouri-Columbia. Thanks are due to Wilbur R. Miller, chairperson; F. Milton Miller, Site Coordinator; and 17 participating members of the Department of Practical Arts and Vocational-Technical Education, University of Missouri-Columbia; and to Henry Ten Pas, chairperson; Melvin Miller, Site Coordinator; and the 25 participating members of the Division of Vocational Education, Oregon State University who labored with Center Staff in development of the first version of the materials. Contributions of the following Center staff who worked on-site with the Oregon State University and University of Missouri-Columbia faculties are also recognized: Robert Andreyka and James B. Hamilton, Site Team Leaders; and Francis E. Clark, Barbara J. Sethney, and Delbert W. Shirley, Research Specialists.

Preliminary testing of the materials was conducted at Oregon State University, Temple University, and University of Missouri-Columbia. Following preliminary testing, major revision of all materials was performed by Center staff with the assistance of numerous consultants and visiting scholars from throughout the country.

Advanced testing of the materials was carried out with assistance of the vocational teacher educators and students of Central Washington State College; Colorado State University; Ferris State College, Michigan; Florida State University; Holland College, P.E.I., Canada; Oklahoma State University; Rutgers University; State University College at Buffalo; Temple University; University of Arizona; University of Michigan-Flint; University of Minnesota-Twin Cities; University of Nebraska-Lincoln; University of Northern Colorado; University of Pittsburgh; University of Tennessee; University of Vermont; and Utah State University. Appreciation is extended to the site coordinators, the over 2,000 preservice and inservice teachers, and over 250 resource persons from the above institutions who used the materials and provided feedback to The Center for refinement.

Special thanks go to the American Association for Vocational Instructional Materials (AAVIM), Dr. Harold Parady, Executive Director and George Smith, Art and Layout Editor, for their cooperation and valuable assistance in the publication of The Center's PBTE curricular materials.

The Center is grateful to the National Institute of Education for sponsorship of this PBTE curriculum development effort from 1972 through its completion. Appreciation is extended to the Bureau of Occupational and Adult Education of the U.S. Office of Education for its sponsorship of training and advanced testing of the materials at 10 sites under provisions of EPDA Part F, Section 553. Recognition of funding support of the advanced testing effort is also extended to Ferris State College, Holland College, Temple University, and the University of Michigan-Flint.

Robert E. Taylor
Executive Director
The Center for Vocational Education

ABSTRACT

PERFORMANCE-BASED PROFESSIONAL EDUCATION CURRICULA

The Center's performance-based teacher education curricular materials are products of a sustained research and development effort which has focused upon the incongruity between current vocational teacher education practices and the actual preparation needed by persons who expect to teach with optimum effectiveness.

The Curricular Materials

The curricular materials consist of one hundred (100) performance-based vocational teacher education (PBTE) modules and related supportive materials. Categories of modules and numbers of modules in each category follow:

Category	Number of Modules
A - Program Planning, Development, and Evaluation	11
B - Instructional Planning	6
C - Instructional Execution	29
D - Instructional Evaluation	6
E - Instructional Management	9
F - Guidance	5
G - School-Community Relations	10
H - Student Vocational Organizations	6
I - Professional Role and Development	8
J - Coordination of Cooperative Education	10

Supportive materials include: a *Student Guide to Using Performance-Based Teacher Education Materials* to help orient the module-taker to PBTE instruction; a *Resource Person Guide to Using Performance-Based Teacher Education Materials* to assist those persons helping preservice and/or inservice teachers to use the modules; and a *Module Development Handbook*. These materials have been developed and tested pursuant to a contract with the National Institute of Education (NIE).

Under a separate grant from the U.S. Office of Education (EPDA), other PBTE products have also been developed. These include a comprehensive literature review entitled *Performance-Based Teacher Education: The State of the Art--General Education and Vocational Education* and a *Guide to the Implementation of Performance-Based Teacher Education*. These materials are designed to help teacher educators, cooperating teachers, and state department personnel involved in the design and implementation of PBVTE curricula within their institution.

Each module in the series of 100 PBTE modules focuses upon specific professional competencies of vocational teachers. The competencies upon which the modules are based were identified and verified through research as being important to vocational teaching at both the secondary and post-secondary levels of instruction. The modules are suitable for the preparation of teachers in all occupational areas.

Each module provides learning experiences that integrate theory and application; each culminates with criterion-referenced assessment of the teacher's performance of the specified competency. The materials are designed for use by individuals or groups of teachers-in-training working under the direction and with the assistance of teacher educators or other professional staff acting as resource persons.

The design of the materials provides considerable flexibility for planning and conducting performance-based preservice and inservice teacher preparation programs to meet a wide variety of individual needs and interests. The materials are intended for use by universities and colleges, state departments of education, post-secondary institutions, local education agencies, and others responsible for the professional development of vocational teachers.

Research and Development

The research and development of The Center's performance-based vocational teacher education materials involved two major phases: (1) identification of important teaching competencies (research base), and (2) development, testing, and revision of materials. These two developmental phases, which are being followed by a dissemination phase, are shown in diagram form in Figure 1. While the research phase and the development and testing phase were carried out sequentially, many dissemination activities have been carried out concurrently with the testing and revision activities of the development and testing phase.

The Research Base

Center work began in 1967, under sponsorship of the U.S. Office of Education, with the first of two research projects to determine the important teacher competencies of vocational teachers. Approximately 1,000 vocational teachers, supervisors,

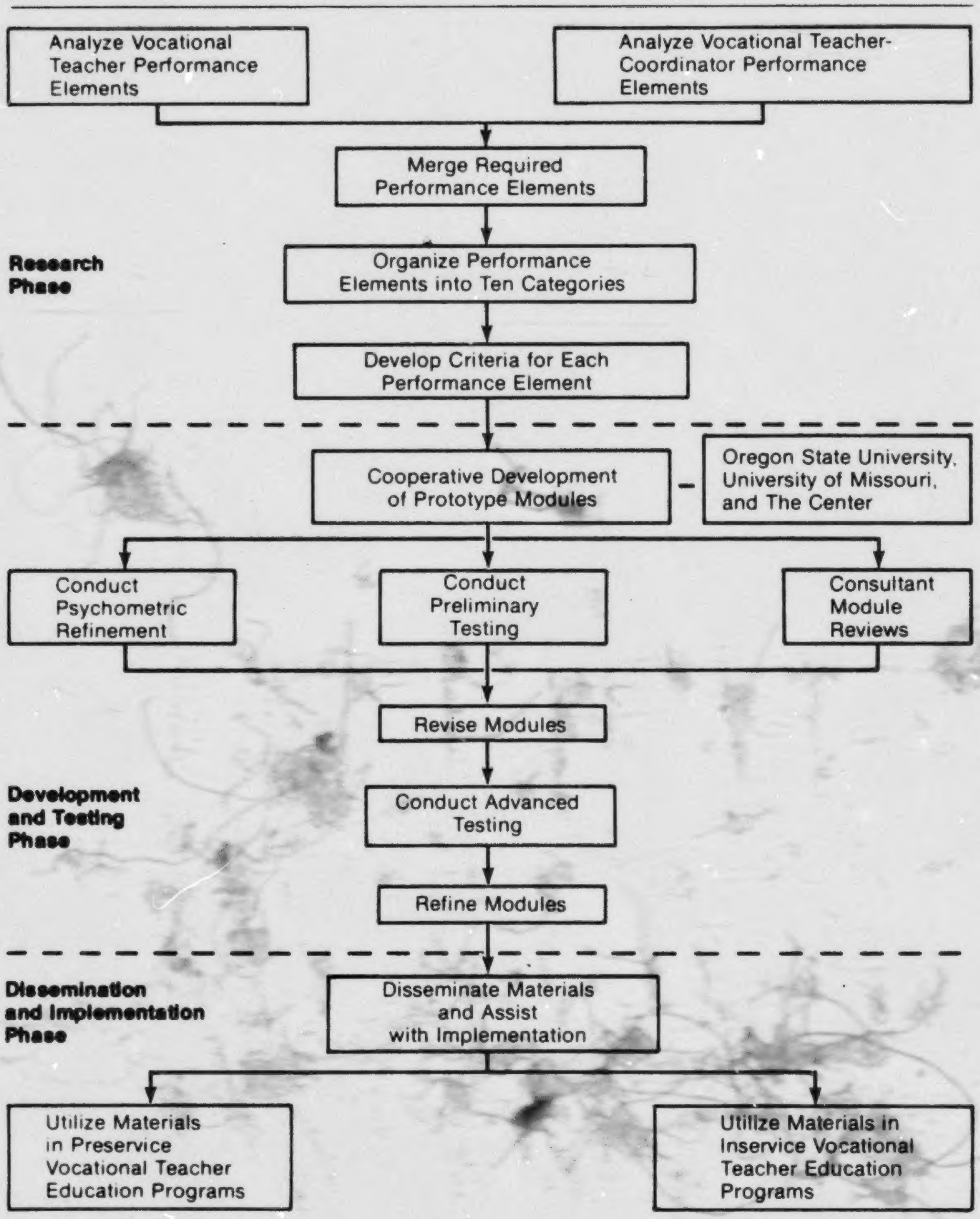

Analyze Vocational Teacher Performance Elements
Analyze Vocational Teacher-Coordinator Performance Elements
Merge Required Performance Elements
Research Phase
Organize Performance Elements into Ten Categories
Develop Criteria for Each Performance Element
Cooperative Development of Prototype Modules
Oregon State University, University of Missouri, and The Center
Conduct Psychometric Refinement
Conduct Preliminary Testing
Consultant Module Reviews
Revise Modules
Development and Testing Phase
Conduct Advanced Testing
Refine Modules
Dissemination and Implementation Phase
Disseminate Materials and Assist with Implementation
Utilize Materials in Preservice Vocational Teacher Education Programs
Utilize Materials in Inservice Vocational Teacher Education Programs

Figure 1. Phases of the PBVTE Curricula Development

and teacher educators were involved in the identification and verification of 384 performance elements, or competencies, considered important for vocational teachers.

In the first project of the research phase (1967-69), important competencies needed by teachers of conventional in-school vocational education programs in the several vocational service areas and at the secondary and post-secondary levels were identified and verified.

The second project of the research phase (1967-71) identified the importance competencies needed by teacher-coordinators in cooperative vocational education programs. The findings of the two projects were then merged, resulting in a listing of 384 competencies clustered into ten categories representing ten areas of vocational teacher responsibility.

Development of Curricular Materials

Following the identification of the 384 vocational teacher competencies, work was initiated in the summer of 1971 to develop the necessary curricular materials for implementing PBTE programs at the preservice and inservice levels for all vocational service areas. In 1972, sponsorship of this effort was assumed by the National Institute of Education (NIE) which maintained sponsorship up to the point of publication of the materials.

The curricular materials are in the form of individualized learning packages, or modules, each of which has as its base one or more of the 384 competencies. By basing the modules on the identified competencies, there is a reasonable assurance that the objectives of the modules represent competencies actually needed by vocational teachers.

The module development process was structured to ensure maximum involvement of persons representing all vocational service areas and actively engaged in vocational teacher preparation. Each module was originally developed in cooperation with vocational teacher education faculties at Oregon State University, Corvallis, and University of Missouri-Columbia. The Center for Vocational Education staff worked on-site with writing teams representing the different service areas of each of these universities.

A quite rigid system of development, review, and revision was followed by the writing teams at each of these sites during the initial module development. In this manner, a total of 123 prototype modules were developed. Following development of each module to the satisfaction of the faculty at the site, the module was then forwarded to the other site for review and critique by its faculty. Each module also underwent review and critique by Center staff, a synthesis of all faculty and staff reviews was developed, and the module was revised by Center staff. Recommended reorganizations and recombinations of elements resulted in a reduction in the number of modules. Thus, from 1971-73, 118 professional vocational teacher education modules were developed and revised in preparation for initial testing.

Preliminary Testing and Revision of the Materials

Initial testing of the performance-based curricular materials was carried out during 1973-74 at Oregon State University, University of Missouri-Columbia, and Temple University. Each of the 118 modules was used by a minimum of ten preservice and/or inservice vocational teachers at one or more of the test sites. Reaction forms were completed by each student for each module used and by each faculty member or resource person for each module they administered. In addition, in-depth taped interviews were conducted to clarify and gain additional feedback from students and resource persons for a sampling of the modules tested.

Concurrently, the California Testing Bureau of McGraw-Hill conducted psychometric refinement of the objectives and assessments of each of the 118 modules. Several individual modules and entire categories of modules were also reviewed and critiqued by independent consultants and subject matter experts during this phase of the study.

Using the inputs from students, resource persons, psychometric refinements, and consultant reviews, each of the modules underwent major revision of content and format. This major revision was initiated by Center program staff during the summer of 1974 with completion occurring in the spring of 1976.

Advanced Testing of the PBTE Curricula

In the summer of 1973, upon recommendation of a program evaluation panel, a decision was made by the sponsor to combine the advanced formative and summative evaluations into a single evaluation to be conducted by a third party. It was later learned that funding would not be available for the planned third party advanced testing, and The Center was requested to carry out what advanced testing could be done within The Center's existing project resources.

Initially, three advanced testing sites were selected, and testing began during the winter of 1975. During the spring and summer of 1975, advanced testing was also initiated at four self-sponsored sites. Then, ten additional advanced test sites were added in the fall through U.S. Office of Education EPDA sponsorship of a National Institute for PBTE conducted by The Center.

From 1975 through 1976, advanced testing of the materials was conducted at the 17 sites representing wide geographic areas and settings as well as several differing PBTE program structures. Feedback from each individual using the modules and from each resource person was gathered to further improve the materials and to document their effectiveness. Over 2,500 preservice and inservice teachers and over 250 teacher educators and other resource persons participated in the testing and provided feedback to The Center. This user feedback provided information concerning the characteristics of the user and how well the materials served his/her needs.

Advanced test data showed the modules generally to be highly effective in developing the specified competencies in both preservice and inservice training programs. Pre/Post estimates of teacher trainee performance showed increases in ability to perform the specified competency for each of the 100 modules. Furthermore, these increases were statistically significant at the .01 level of confidence for 98 of the 100 modules. Further, teacher trainee and teacher educator reactions regarding quality and utility of the materials were highly positive.

Refinement, Publication, and Dissemination

Although first efforts were initiated in 1974 to obtain commercial publication of the PBTE materials, completion of an agreement for publication of the materials was not achieved until mid-1976. At that time, the publisher, American Association for Vocational Instructional Materials (AAVIM), and CVE staff jointly determined final format of the materials, and content and format refinement of the materials was begun. Based upon the advanced testing feedback, few substantive changes were necessary. Refined materials were delivered to the publisher from September 1976 through September 1977. The publisher initiated incremental release of published materials in March 1977, with release of the last materials projected for Spring 1978.

Joint dissemination activities are being carried out by The Center, the publisher, and through federal, state, and regional sponsors to provide orientation and training for effective implementation and use of the PBTE curricular materials.

CHAPTER I:
THE NEED

The performance of teachers--their competency in stimulating and facilitating the development of concepts, habits, skills, and attitudes related to successful career preparation of students--is generally assumed to be a function of the quality of their own preparation. Unfortunately, according to teacher education leadership, most of the presently available methods and procedures do not permit teachers to attain the level of effectiveness to which they aspire.

The problem of providing relevant and effective teacher preparation in vocational education can be viewed as three-dimensional. First, although most professional educators espouse the need for developing vocational curricula upon worker's job requirements, their own courses are seldom based upon the teacher's actual job requirements. Teacher educators, however, have not had access to a systematic performance analysis of vocational teacher roles. As a result, most vocational teacher education is still basically subject matter centered rather than performance centered, with the accompanying risks of teaching nonfunctioning skills and relying on questionable evaluation procedures. Although evaluation of tangible performance is often mentioned as being important in secondary and post-secondary occupational preparation, teacher educators often succumb to the temptation to focus on purely academic assessment (e.g., a term paper or written test) in their own courses.

Second, teacher educators have not generally been able to work flexibly based on individual student teacher needs. Although teacher educators may emphasize that attention should be given to individualization of instruction for vocational students, their own classes are typically conducted in a large-group lockstep manner. Further, they have been forced to follow a prescribed course-by-course sequence for both preservice and inservice teachers, regardless of the actual level of knowledge and competence of the individual teachers.

Regarding the first two dimensions of the problem, the future of vocational education is essentially no different from that of general education. Increased emphasis on systematic curriculum development is necessary to ensure that more relevant vocational teacher education programs evolve. The third dimension, however, appears somewhat unique to vocational teacher education. This is related to the efficiency of program operation. Currently, many universities and colleges provide vocational teacher education by service area (i.e., Agricultural, Business and Office, Distributive, Health Occupations, Home Economics, Technical, Trade and Industrial Education) in separate courses taught by separate departments. While this appears logical for the various technical subject matter areas, in the professional vocational teacher education area serious questions can be raised regarding overlap and duplication of effort. It has been strongly suggested by many that universities should "provide across-the-board vocational teacher education courses emphasizing commonalities with respect to content, methodology, and socio-legal consideration" (Simpson and Ellis, 1971). Moreover, research conducted by The Center for Vocational Education (Cotrell and others 1971-72, to be discussed later in this report) found that over 90 percent of the professional vocational teacher competencies are common to two or more service areas.

It appeared, then, that vocational teacher education programs could increase their efficiency by providing "core" experiences--experiences common across various vocational service areas. Hopefully, offerings of this type would reduce teacher education costs and at the same time reduce the duplication of effort associated with vocational teacher education. Unfortunately, the gap between research and implementation is wide. Universities and their respective departments are not altogether pleased with the prospect of what they might term as "consolidation" and "loss of department autonomy." The history and tradition of separation has left its mark on many vocational teacher educators. In light of such conditions, it appeared most fruitful for instructional materials appropriate for "core" experiences to be developed and tested by an outside agency in order to maximize acceptance by members of the respective service areas.

Evidently many of the principles thought to be important in sound instructional programs were not adhered to when teachers were being taught. The preparation of vocational teachers had been lacking in terms of (1) not building curricula on the actual work requirements of the teacher, (2) not providing learning experiences which related directly to professional needs, (3) not tailoring instruction to meet the needs of individuals, (4) not systematically evaluating performance of the instructional product, and (5) not structuring preparation programs to eliminate overlap and duplication across the various vocational service areas.

It was apparent that minor modification would not suffice to adequately prepare vocational teachers for their professional role. Traditional practices needed to be displaced by a more systematic approach to professional development, one which would focus on eliminating many of the current teacher preparation practices and replacing them with a more relevant instructional environment. It was for this reason that The Center decided to focus first upon identification of the performance requirements of vocational teachers (a series of studies carried out prior to, and not as part of, the scope of work of the project reported in this document) and then upon the development of instructional materials which would fit into a performance-based system for vocational teachers.

Performance-based teacher education (PBTE) appeared to offer a viable alternative to current teacher education practices. Statements published by AACTE Committee on Performance-Based Teacher Education (Elam, 1971; AACTE, 1974) described the parameters of PBTE by specifying certain elements that are considered generic to any program that may be defined as being performance-based. The five essential characteristics that distinguish PBTE from other programs are:

1. Competencies to be demonstrated by the teacher are identified, based upon what a teacher must know and be able to do. The competencies are stated as behaviors which can be assessed and are shared with the teacher at the beginning of the program.

2. Criteria to be used in assessing each specific competency are stated, including the conditions under which assessment will occur and the expected level of mastery. Criteria are also shared with the teacher at the start of the program.

3. The instructional program focuses upon development and evaluation of the specified competencies by the teacher.

4. Assessment of the teacher's competency uses his/her performance in the teaching role as the primary source of evidence. Objective evidence of the teacher's knowledge related to planning, analyzing, interpreting, or evaluating situations or behavior are also considered.

5. The teacher's rate of progress through the program is determined by demonstrated competency rather than by time or course completion (AACTE, 1974, pp. 32-33).

In addition to the above essential characteristics, there are several additional desirable characteristics of PBTE programs. These include:

1. Instruction is individualized and personalized.

2. The learning experience is guided by feedback.

3. The program as a whole is systemic.

4. Emphasis is on exit, not on entrance requirements.

5. Instruction is modularized

6. The teacher is held accountable for performance (AACTE, 1974, pp. 32-33).

Prior research conducted by The Center in the project "Model Curricula for Vocational and Technical Teacher Education" under the direction of Dr. Calvin J. Cotrell has resulted in the identification of requisite competencies and provided the base upon which curricular development could logically proceed. The objective of the research project (under sponsorship of the U.S. Office of Education) was to determine the professional (pedagogical) performance requirements for vocational and technical teachers and the differences in requirements among the various service areas. Research was divided into two phases which are outlined in block diagram in Figure 2.

Phase I was concerned with the identification of performance requirements of teachers of conventional programs in agriculture, business, distributive, health occupations, home economics, technical, and trade and industrial education. Initially, The Center staff conducted a literature search to identify work that has been done which would have a bearing upon the study. Next, an occupational analysis of the competencies required by vocational teachers was conducted with a selected sample of professionals. Resource persons consisted of master teachers and teacher educators with experience in the teaching areas being studied. The analyses from the seven areas were then merged.

As a result of the analysis, a preliminary list of 237 tasks was developed. These tasks were, through expert judgment, placed into ten categories. The categories included: Planning of Instruction; Execution of Instruction; Evaluation of Instruction; Management; Guidance; Public and Human Relations; Student

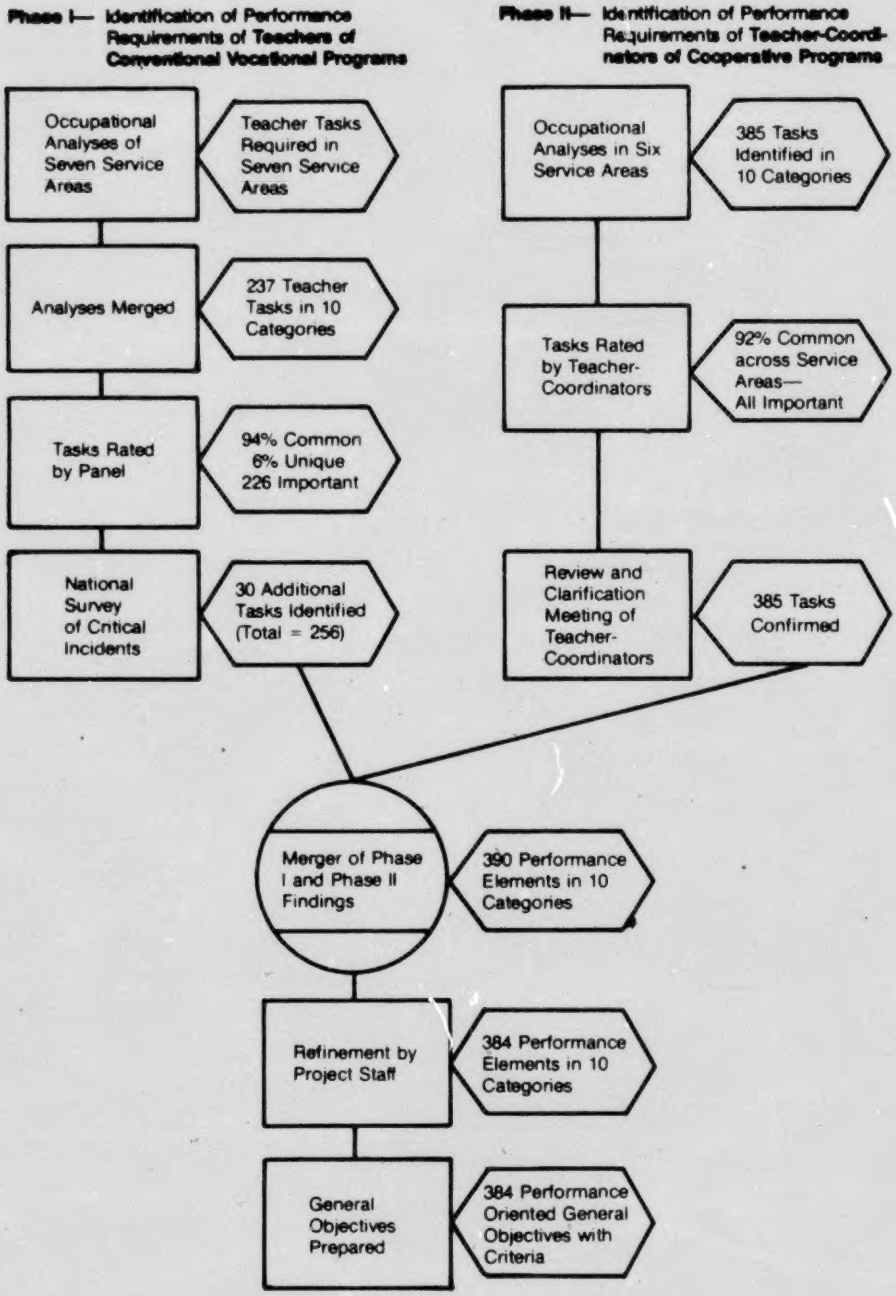

Phase I— Identification of Performance Requirements of Teachers of Conventional Vocational Programs
Phase II— Identification of Performance Requirements of Teacher-Coordinators of Cooperative Programs
Occupational Analyses of Seven Service Areas
Teacher Tasks Required in Seven Service Areas
Analyses Merged
237 Teacher Tasks in 10 Categories
Tasks Rated by Panel
94% Common 6% Unique 226 Important
National Survey of Critical Incidents
30 Additional Tasks Identified (Total = 256)
Occupational Analyses in Six Service Areas
385 Tasks Identified in 10 Categories
Tasks Rated by Teacher-Coordinators
92% Common across Service Areas— All Important
Review and Clarification Meeting of Teacher-Coordinators
385 Tasks Confirmed
Merger of Phase I and Phase II Findings
390 Performance Elements in 10 Categories
Refinement by Project Staff
384 Performance Elements in 10 Categories
General Objectives Prepared
384 Performance Oriented General Objectives with Criteria

Figure 2. Research Base for Performance-Based Vocational Teacher Education Curriculum

Vocational Organization; Professional Role; General School Activities; and Coordination.

Tasks were then examined and rated by a panel. The 21-member panel, representing each of the seven service areas and 19 states, was selected by The Center staff with recommendations from the USOE, Division of Vocational and Technical Education, and other leaders in the field. The group examined and rated the tasks and identified important common and unique tasks by service area. It was found that 94% of the tasks were common across the seven service areas. Additionally, 226 of the 237 tasks were deemed important to the successful vocational teacher. The ten categories were confirmed as being relevant.

Next, a national survey of vocational teachers was conducted. Teachers were asked to identify incidents which were critical to their success. As a result of this survey, 30 tasks were added to the list, making a total of 256 competencies. One hundred and forty existing competencies were verified as being important to the successful teacher (Cotrell and others, 1971a, 1971b).

Phase II of the research project was concerned with the identification of performance requirements for teacher-coordinators of cooperative programs in off-farm agricultural, office occupations, distributive, wage earning home economics, trade and industrial, and special needs education. A task analysis was again conducted after a literature search was made. This analysis was done on a small scale and involved Center staff and small groups of teachers. Based upon this analysis, a preliminary list of teacher-coordinator tasks was developed. It consisted of 385 tasks, including the ones identified in Phase I of the project.

At this point, 300 persons nominated by their respective state supervisors as outstanding teacher-coordinators were chosen to examine and rate the tasks. Fifty persons from each of the aforementioned service areas were asked to rate them in terms of their importance to the successful teacher-coordinator. Analysis of data revealed the important common and unique tasks by service area. All were deemed to be important by the group, and 92% of the tasks were of common importance across two or more service areas.

Next, a randomly selected sample of the 300 raters was brought to The Center for a review and clarification meeting. Twenty-nine outstanding teacher-coordinators reviewed the various tasks and clarified ratings of them for the project staff at points where questions were raised.

The findings of Phases I and II were then merged into one comprehensive list of 390 performance elements for all teachers of vocational education. After refinement by project staff, the 384 performance elements remaining were organized into the following ten professional categories:

A - Program Planning, Development, and Evaluation
B - Instructional Planning
C - Instructional Execution
D - Instructional Evaluation

E - Instructional Management

F - Guidance

G - School-Community Relations

H - Student Vocational Organization

I - Professional Role and Development

J - Coordination

Finally, a set of performance-oriented general objectives, specifying the task and the general criteria for evaluating a teacher's performance of the stated activity, was developed (Cotrell and others, 1972c).

With the research base of 384 common competencies identified, the immediate need then became the development of performance-based instructional materials to deliver on those competencies. The instructional materials needed to be designed to embody and promote the essential and desirable characteristics of PBTE as well as to provide the necessary flexibility, utility, and acceptability for implementing both preservice and inservice professional preparation programs for vocational teachers in a wide range of administrative and institutional structures.

CHAPTER II:
CURRICULAR DEVELOPMENT, TESTING, AND IMPLEMENTATION

Following the findings of the studies conducted to identify the skills important to teachers (384 performance elements), this research base was used to structure a developmental project focusing on the production of performance-based modules (instructional packages) which could be used to assist pre- and inservice teachers in developing these identified teaching competencies. Each module would use individualized instructional concepts and would be designed for use by persons preparing to teach, or engaged in teaching, agricultural, business, distributive, home economics, technical, or trade and industrial education.

Cooperative Development of Modules

In order to ensure that each module would reflect the actual needs of vocational teachers, that each would appear to the users as likely to deliver on the objectives, and that each would be acceptable to potential users, the module development process was structured so as to ensure maximum involvement by persons in real world settings. Thus, each module was initially developed in cooperation with persons at institutions and agencies representative of those who will eventually use it.

In 1971, a set of criteria was established for selecting those sites which would be involved in this cooperative development process:

1. The administration will accept the program.

2. Budgetary commitment can be obtained in writing from the administration which is ample for a mutual sharing of costs.
3. An adequate number of qualified faculty are available for the type of commitment required.
4. Institutional channels and policies will accept and facilitate the establishment and approval of courses for the new curricula.
5. Faculty loads will be adjusted so that members will have adequate time (two days each week) to work on the developmental aspects of the study.
6. There is a department of vocational education in a college of education.
7. The faculty of the department is stable (not known for turnover).
8. There is a history of cooperation between professional personnel in the state department of education and the university department of vocational-technical education.
9. The college staff is willing to learn to write performance goals.
10. Teacher educators on staff are flexible, adaptable, and willing to try the performance-based core and other concepts of teacher education.
11. State department of vocational education will accept the proposed program.
12. Graduates will receive the standard teaching credential granted others completing the same degree program.
13. Faculty will accept concepts (performance-based curricula, core courses, modular scheduling, and individualized instruction) of programs to be developed.
14. All seven vocational service areas are represented by the faculty.
15. The reputation of the vocational teacher education department is good.
16. State certification provisions exist for experimental and innovative teacher education programs.

17. Institutional representatives will cooperate in the evaluation of the curricula and in the follow-up evaluation of graduates.

18. The institution has sufficient facilities and equipment available [to support use of individualized materials].

19. Employers (school superintendents) will accept and hire program graduates.

20. The institution's reputation is academically sound.

21. The administration and faculty are willing to work cooperatively with all of the project staff regardless of their levels.

22. Institution has the enrollment adequate to test the experimental courses.

23. Institution has Ph.D. candidates and graduate students interested in teacher education and available for working part-time on the project.

24. Teachers (associations) will accept program graduates.

25. The department has a full range of programs.

26. Other new and challenging enterprises will not conflict or distract.

27. Institution is preparing teachers for all kinds of school settings.

28. The institution draws students from varied backgrounds.

29. Travel time and conditions are good.

30. The proximity of the cooperating institution expedites travel and communications.

These criteria were designed to aid in the selection of sites not only qualified to provide the developmental assistance required, but also committed to implementing the materials once developed.

CVTE staff visited leading candidates, and two institutions, The University of Missouri at Columbia and Oregon State University at Corvallis, were finally selected. Cooperative agreements were finalized by August 1971. These agreements provided for a Coordinating Board (project director, site team leaders, department heads, and state directors) to periodically meet to make key decisions for operational problems, and a Review Board (the state directors of vocational education, the deans of the two colleges of education, the director of The Center, and The Center's assistant director for development) to evaluate the progress of the project.

The staffing structure for the cooperative development process involved Center staff and persons at each of the sites as follows:

1. Staff at The Center, including teacher educators, graduate students, and technical writing/editorial persons.
2. A Center site team at each site, including two R & D specialists trained and oriented at The Center, one research associate, and a secretary.
3. Staff at each site, including teacher educators representing each of the seven vocational service areas, and administrators.

At the time of initiation of cooperative development of materials, concern was raised that project work not duplicate other ongoing federally funded PBTE efforts in general education. The decision was made to limit project efforts to development of modules to deliver on only those competencies which could be justified as being more unique to vocational-technical teachers than to general education teachers. The members of the Coordinating Board individually rated each of the 384 general objectives on this basis. Summarization of these ratings resulted in a reduction, by approximately two-thirds, of the general objectives for initial consideration for module development at the cooperating sites. Several months into the development effort, however, it was determined that similar PBTE curricular materials were not being developed and made available under other projects and that all 384 general objectives should be included in the project effort.

The development process began with a meeting of the site team and faculty to review and react to the conceptual framework for a given category of modules which were to deliver on the performance elements (from the previously identified 384) for that category. The conceptual framework is the clustering of general objectives into modules with tentative titles, and shows their relationship to other modules in the category. During this meeting, the teacher educators were encouraged to provide constructive criticism when they felt it would result in more effective modules, and they indicated which modules they would prefer to work on as members of a writing team. These brainstorming sessions were at times rather lengthy and involved.

Writing teams of two or more teacher educators and a Center site team member were then formed. Each writing team was organized with all service areas represented whenever possible. A team would then complete the following steps in the development process:

1. Writing team meets to develop objectives and identify potential resources for the module.

2. Center site team member takes input from Step 1 and roughs out the introduction and first learning experience for the module.

3. A small writing team reviews the work completed in Step 2 and identifies additional learning experiences, resources, and the module assessment.

4. Center site team member uses input from Step 3 to rough out remainder of the module.

5. The small writing team reviews entire module and makes suggestions for revisions.

6. Center site team member revises module based on input.

7. Module is sent to second small writing team for review.

8. Center site team member revises module using input from Step 7.

9. Module is reviewed by a teacher educator review team made up of at least one representative from each of the vocational service areas.

10. A decision is made to (a) release module with no revision, (b) release module after revisions have been made by writing team, (c) revise and re-review module.

The "modules" at this stage were fairly skeletal in form, becoming more well developed in terms of format as the cooperative development progressed. A module produced in January 1972 was nine pages long, and contained a title, prerequisites, directions, introduction, a single performance objective, instructions for pre-assessment, three learning experiences, instructions for post-assessment, a reference list, and a 23-item checklist. The directions section was very brief. The learning experiences contained few directions and each succeeding learning experience assumed that the module taker had completed the previous experience. The checklist included a simple YES/NO response; quality was not rated. (See Appendix A for a sample of a prototype module produced on site.) Length of individual modules varied widely, ranging as high as 50 pages.

Once a module was cleared by the review team, it was forwarded to the other site and to The Center for review. In addition, the Module Review Forms completed by the teacher educators at the developing site in Step 9, and completed by teacher educators at the other site, were sent to The Center. These review forms (See Appendix B) were designed to provide a content and face validity check. Teacher educators used these forms to provide general comments and suggestions concerning the following sections of the module:

Introduction - Does it state purpose and overall objective? Does it indicate the need for instruction?

Pre-assessment/Post-assessment - Does it measure attainment of all performance objectives?

Objectives - Are they performance-based? Do they describe observable and measurable behavior?

Learning Experiences - Do they follow a logical sequence? Do they contribute to attainment of the objectives? Are alternate experiences provided? Is there provision for feedback?

Resources - Are the supporting materials and references the best available? Do the resources contribute to the attainment of the objectives?

In addition, each teacher educator (1) wrote specific reactions, suggestions, ideas, etc., on the actual module pages and attached these pages to the review form, and (2) indicated whether he/she would use the module, and how.

When reviews from the teacher educators at each site arrived at The Center, the module was assigned to a Center review team--usually three persons including at least one vocational teacher educator. (See Figure 3 for a graphic illustration of the module review and revision process followed during this stage.) One member of this review team would prepare a synthesis of the site reviews, distribute copies of the module to each review team member, and set up a time for a review meeting. Each team member would then review the module independently, making written comments concerning areas of weakness.

During the review meeting, the person to whom the module was assigned would chair the meeting, ensuring that each member provided input concerning specific sections of the module and the overall module. In addition, the chairperson would inform the other members about the contents of the site reviews. Following a thorough discussion of the module, the group would complete the CVTE Module Review Report form (See Appendix B). By evaluating the module using the criteria on this form, it could be determined whether (a) module needs refinement (e.g., spelling errors, format inconsistencies, or grammatical errors); (b) module needs minor revision (e.g., introduction does not motivate, performance objectives are not performance-based, resources do not represent all service areas, learning experience activities need to be reordered or combined, evaluation criteria should be more specific); (c) module needs major revision (e.g., module does not focus on elements, criteria

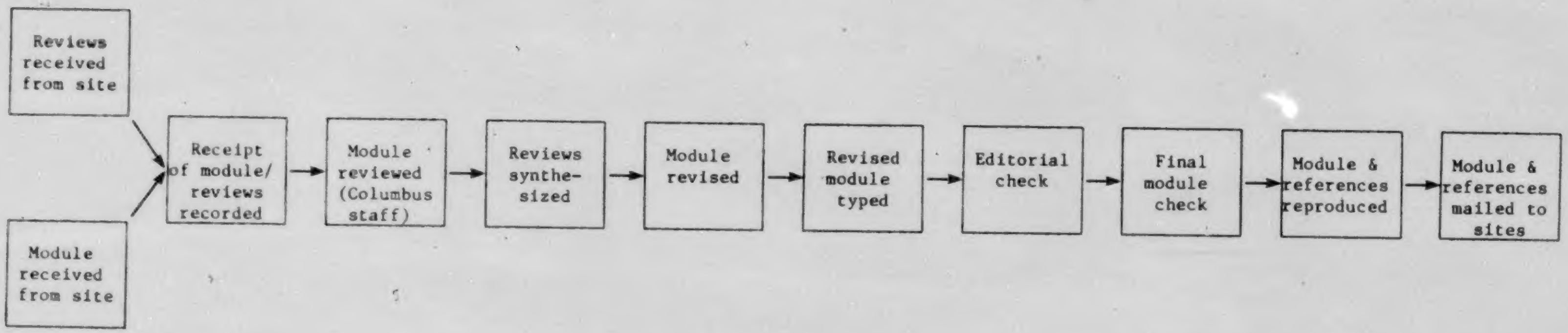

Reviews received from site
Module received from site
Receipt of module/ reviews recorded
Module reviewed (Columbus staff)
Reviews synthe- sized
Module revised
Revised module typed
Editorial check
Final module check
Module & references reproduced
Module & references mailed to sites

Figure 3. Module Review and Revision

are not met, elements are left out, resources are inappropriate or out of date, learning experience does not deliver on objectives, evaluations do not measure achievement of objectives), (d) module needs to be rewritten (e.g., 50% or more site faculty reviewers will not use it).

Following the review meeting, the person to whom the module was assigned would add a summary of the Columbus review to the synthesis of the site reviews (see Appendix B), and refine or revise the module as indicated, targeting the revision to meet the following criteria:

1. Module delivers on objectives.
2. Module meets format specifications.
3. Module is internally consistent.
4. Each learning experience contains no more than 30 pages of reading.
5. Each learning experience contains no more than 3 references.
6. References are up to date.
7. Learning experiences are realistic--can be used by learner without placing undue burden on resource person.
8. Module provides optional and alternate learning experiences where appropriate.
9. Final learning experience requires performance in an actual school situation.
10. Evaluations provide for recycling if level of performance is required.
11. Resources, examples, case studies, etc., provide for service area representation or across-the-board use.
12. Reviewers' comments have been considered in the revision.

13. Useful original content was not tampered with.

14. Decisions to ignore certain comments or change original content can be justified on the basis of site and/or Columbus reviews.

Although 123 modules were produced at the two sites, the number was reduced to 118 during this review process. Developing a lesson plan and writing a lesson plan, originally two modules, were combined. A module in the student vocational organization category on preparing state and national reports was added to the module on directing the initial activities of the organization. In the coordination of cooperative education category, nine elements contained in three modules were added to other modules in the category, reducing the category from sixteen modules to thirteen modules. (See Appendix I for a graph showing the titles of, and competencies included in, the modules during each developmental stage.)

The 118 preliminary test version modules (brown cover) were developed from January 1972 to March 1974. (See Appendix C for a sample of one of the modules produced during this stage.) Aside from the changes made based on the review process, certain other changes, decided upon jointly between Center and site staff, were made to make the format clearer and more standardized and consistent. Different sections of the module were separated physically; for example, the introduction and each learning experience were put on separate pages, and devices to be used for various learning experiences were placed in a supplements section at the back of the module. Again, as the process continued and feedback increased, the format and structure changed slightly to incorporate suggestions from the feedback, and based on the increased expertise of the module writers.

The module components at this point were described as follows:

Title Page

The first page of the module is the title page, consisting of the module title, the prerequisites and directions for the learner.

The module title contains an action verb and reflects the teaching role competency as indicated in the terminal objective.

The prerequisites indicate the competencies that must be attained before starting the module. Prerequisite modules are kept to a minimum.

The directions introduce the learner to the sequence of module activities and orient him/her to accomplishment of the performance objectives. They also provide him/her with a means of trying to "test-out" of the module if the learner is so inclined.

Introduction

The introduction establishes the frames of reference for the entire module. It clarifies the relationship of this particular module to other modules and to the entire teacher program, defines important terms, and motivates the learner by explaining the importance of the competency the module is designed to develop. Although short and concise, the introduction includes enough informative material to provide the learner with an overview of the purpose and content of the module.

By including a clear orientation to the terminal objective or competency to be achieved upon completion of the module, the introduction aids the learner, with the help of his/her resource person, to decide whether the module is applicable to his/her needs at this time in his/her teacher education program.

Performance Objectives

Performance objectives are statements describing:

1. the activities that a learner will be able to perform;
2. the conditions under which the activity will take place, and;
3. the criteria for assessing whether or not the desired level of performance has been attained.

Performance objectives describe observable measurable learner characteristics. Therefore, they focus on the learner's ability to demonstrate the desired teaching behaviors, rather than only to have knowledge (cognition) of the behavior.

Each module contains two types of performance objectives. The first type is a terminal objective which is a statement of the competency the learner can expect to demonstrate in the teacher role upon completion of the entire module. The second type consists of several enabling objectives, which are statements of the behaviors needed to achieve the terminal objective. All of the terminal objectives for the modules are derived from the general objectives, which were generated during prior Center research.

Resource Materials

Resource materials for a module are the supporting printed materials and media needed by the learner to complete the learning experiences. Whenever possible and practical, the resource materials are included with the module. For ease of reference, all resource materials cited within the learning experiences are listed on a Resources List at the beginning of the module.

Learning Experiences

Each learning experience in the module begins with a complete statement of its performance objective, including the conditions and criterion, followed by the learning activities and evaluation. Alternate and/or optional learning activities are also provided whenever possible.

The performance objectives set the parameters for the learning experiences, which, in turn, help the learner develop the competency specified by the terminal objective. Thus, the learning experiences and the performance objectives go hand in hand and are sequenced so that they progress from the initial stage (the presentation of the new concept, attitude, and/or skill), to the application state (the simulation and/or role-playing phase), and finally terminate in an activity in a "real world" setting--that is, the competency is performed in an actual school setting. At this point, the learner is ready for the assessment of his/her teaching competency which the module was designed to develop.

The activities of a learning experience may involve the learner in reading, viewing and/or listening to prescribed media, or engaging in some form of teaching performance. In the margin to the left of each learning experience, a key action verb is provided to indicate to the learner the nature of the activity in which he/she will be involved. In some learning activities, the learner observes or participates in an educational event or activity. A particular interview, a private conference, or a seminar activity may also be included. Such activities assist the learner to attain the performance objectives for which the learning experience was designed.

Feedback in a learning experience may come from a variety of sources, ranging from a self-test to feedback from peers, a resource person, or others who have observed the learner perform the competency. There may be a written test, provided with a key to facilitate a self-check, or a rating instrument which the learner or others use to evaluate the performance. The feedback materials provide objective checks for the learner as he/she progresses through the module. The learner is given clear directions as to how, when, and where these checks are to be administered, along with the necessary materials and scoring keys.

The last learning experience also serves as the assessment and may be defined as the measuring process used to determine the learner's level of mastery of a set of objectives. Measurement may take place prior to or following the completion of the module. That is, in the directions appearing at the beginning of the module, the learner is given the options of (1) being assessed immediately if he/she feels he/she can demonstrate the competency identified by the terminal performance objective. The assessment evaluates performance in an actual school situation and is directly tied to the terminal performance objective.

A primary consideration in the module development process is that the learner be assessed on what the terminal performance objective actually specifies. This is a most important standard to meet, since anything less will result in an invalid, nonreliable evaluation. If a terminal performance objective indicates certain conditions under which evaluation should take place (e.g., a real school setting), this standard must be adhered to. If certain behaviors are specified (e.g., a demonstration of a manipulative skill will be presented), the checklist or other rating instrument used to assess performance should actually reflect those behaviors which are critical to success.

Module Supplement

Supplementary printed materials needed by the person pursuing the module such as self-tests, keys to self-tests, information sheets, and performance rating scales are included in the Module Supplement.

Preliminary Testing of Modules

From September 1972 to August 1974, the 118 prototype modules underwent preliminary testing. Original plans called for each module to be tested at the two cooperating institutions previously named: University of Missouri at Columbia, and Oregon State University at Corvallis. However, in January 1972, there existed an unmet requirement for testing modules especially appropriate for inservice teachers in an off-campus situation. Temple University at Philadelphia and the Pennsylvania Department of Education were able to meet this particular need in a timely manner.

Preliminary formative testing began at one or more test sites when a revised module was received from The Center. For each module, at least ten pre- or inservice teachers at one or more of the three test sites were selected to test the module on a voluntary basis. Every effort was made to have testing completed by pre- and inservice teachers representing a cross section of the various vocational service areas, but this was not always possible due to scheduling constraints.

Concurrent with or prior to selection of pre- and inservice teachers, teacher educators were selected to conduct the field test. Checks were also made to be sure that all appropriate facilities and resources were available in sufficient quantity and in good condition.

At a scheduled time, the pre- and inservice teachers completed the module under the supervision of a teacher educator following specific guidelines provided by Center staff, and data was gathered from these persons concerning the following areas:

- Do the teacher educators administering the module perceive it to be an effective teaching/learning device?
- Do the pre- and inservice teachers taking the module perceive it to be an effective teaching/learning device?
- Do the pre- and inservice teachers taking the module achieve mastery of the learning experience objectives?
- Do the pre- and inservice teachers accept the module as having sufficient depth of content material?

This data was initially gathered via three instruments (see Appendix D): (1) a Module Reaction Form to be completed by each pre- or inservice teacher who had completed a module, (2) a Module Field Test Report to be completed by the teacher educator or resource person for each module used by his/her students, and (3) a Module Evaluation Form to be completed by the teacher educator as a summary of the number of students completing a module under his/her direction, and the extent to which each student completed the module (e.g., number of learning experiences completed, number of times each experience was attempted before mastery was reached, and number of persons attempting to "test out" and their success). The Module Evaluation Form proved difficult for the resource persons to complete due to the individualized nature of the modules, and, thus, that form was not required as the testing progressed.

The Module Reaction Form provided The Center with information concerning the status (inservice, preservice) and vocational service area of the module taker. In addition, it provided data on the number of hours spent and number of learning experiences attempted and completed by each module taker for a given module. Specific reactions concerning the module were solicited using a five-point rating scale and questions concerning the objectives, learning experiences, feedback devices, and the instructional materials, and general reactions were also solicited (e.g., What did you like best about the module?...least?)

The Module Field Test Report required the teacher educator or other resource person to provide information concerning how the module was used, how reasonable the time requirements were for the module, how effective the module was, and whether he/she would use the module again. In addition, resource persons were asked to list the greatest strengths and greatest weaknesses of the module.

In addition to these written documents, data were also collected by the site coordinator via face-to-face interviews with teacher educators and a sample of two pre- or inservice teachers completing each of a stratified random sampling of modules as indicated in the Articles of Agreement. During these interviews, which were often taped, the site coordinator attempted to clarify and expand upon the responses made by these individuals on their written data-collection instruments.

As each module was tested at one or more sites and test results were received at The Center, a record was made of all instruments received. When all site feedback for a particular module was received, the data were summarized as follows (see Appendix D for samples):

- A Module Reaction Form summary sheet was used to compile all data provided by pre- and inservice teachers on the Module Reaction Forms for an individual module. From this data, the mean, mode, and range for each item across respondents was calculated.
- Written comments provided on the Module Reaction Forms were compiled onto a separate summary sheet.

These two summary sheets, together with copies of all Module Field Test Reports received, were placed in a module revision file in the appropriate folder for that module. A folder for a given module would also contain a copy of the prototype version of the module, a copy of the preliminary test version of the module, copies of any supplementary references, transcripts of interviews with teacher educators and pre- and inservice teachers who had tested the modules, and copies of any additional feedback received from a site (e.g., a lesson plan developed by a person completing Module B-4).

Concurrent with the preliminary testing efforts, two additional sources of feedback were tapped: consultant reviews and psychometric refinement. Ten independent consultants were hired at different points in time to review and evaluate module content and structure by category. This was deemed necessary for several reasons. Modules within a given category were often authored, and revised, by several different persons working quite independently, thus allowing overlap, repetition, gaps, and inconsistencies. Secondly, informal and formal feedback regarding some categories, specifically A, H, and J, indicated that some reorganization within a category was needed either to reduce the number of modules within that category, or to make the concepts more comprehensible. Thus, ten consultants who were subject matter experts in the various categories were each charged with reviewing a whole category of modules and reconceptualizing and reorganizing as needed. This input was added to the revision files.

The final aspect of the preliminary testing effort dealt with module psychometric refinement. Under contract with the California Testing Bureau (CTB), a subsidiary of McGraw-Hill, psychometric refinement of each module was conducted. After checking for internal consistency (i.e., how well module components--objectives, learning experiences, assessment--align with each other), CTB staff refined the objectives in each module. Further, staff at CTB annotated each module, identifying problems associated with its specific content. These annotations and refinements, including changes in assessment devices if needed, were also placed in the revision files (see Appendix D).

Summary of Module Preliminary Testing Results

One hundred eighteen modules were tested; 71 (60.2%) of them were tested in two or more sites. Reported in this section are the important findings. For specific figures on each module, see the tables in Appendix D.

Fifty-nine of the modules (50%) were used by twenty or more vocational teachers. Ninety-seven of them (82.2%) were tested at both preservice and inservice levels. One hundred and five modules (88.9%) were tested by teachers from at least three different vocational service areas. More than half of the modules (74; 62.7%) were used by people representing five or more vocational service areas.

Out of the total of 118 modules, 89 of them (75.4%) were tested on an individualized instructional basis, and 29 (24.6%) were tested on both an individualized and group basis.

A large number, over a hundred different teachers both in preservice and inservice, were involved in the preliminary testing. They represented eight different vocational service areas and levels (agriculture education, business and office education, distributive education, health occupations education, home economics education, industrial arts education, technical education, and trade and industrial education).

Approximately thirty teacher educators functioned as resource persons and/or testing coordinators. They represented the same eight vocational service areas and levels as the students.

Teacher educator responses.--In relation to the objectives to be attained, teacher educators were asked to indicate whether the length of time spent by students on each module was too short, reasonable, or too long. Eighty-two modules (69.5%) were felt to require reasonable amounts of time and seventeen of them (14.4%) received mixed ratings, too short, reasonable, and/or too long. Only five modules (4.2%) were considered too short and only ten (8.5%) were rated as too long.

When the effectiveness of the modules was rated in relation to the time spent on administering them, 76 of the modules (64.4%) were considered effective, 7 (5.9%) highly effective, and only 10 modules (8.5%) were considered ineffective. The remaining 25 modules (21.1%) received mixed ratings, highly effective, effective, and/or ineffective.

When teacher educators were asked whether they would use the module again to prepare vocational teachers, they indicated that 75 modules (63.6%) would be used again with some revision. They also reported that they would use 20 modules (16.9%) again without any revision. Only 7 modules (5.9%) were felt to be undesirable. Sixteen of the modules (13.6%) received mixed ratings, indicating that they would be used again by some teacher educators with or without revision, while not by others.

Student responses.--Each student completed a Module Reaction Form after finishing each module. In this form, questions about the worth of different parts of a given module were answered on a five-point Likert scale ranging from "Strongly Agree - 1 point" to "Strongly Disagree - 5 points."

In answering the question about whether the module objectives were easily understood, objectives of 108 modules (91.5%) were considered easily understood with a rating score of 2.5 or less. The students indicated that learning experiences in 109 modules (92.4%) had assisted them in achieving the module objectives. They were well aware of their progress (or lack of progress) as they worked through 108 (91.5%) of the modules. They agreed that evaluations (self-tests, rating sheets, check lists) in 111 of the modules (94.1%) measured their achievement of the module objectives. The learning experiences in 92 modules (77.9%) were considered to be making the best use of the students' time. They felt that the module instructional materials (readings, etc.) in 109 modules (92.4%) had helped them achieve the objectives. The students indicated that the performance objectives included in 107 modules (90.7%) were important to success in vocational teaching.

In summary, based on the responses of the teacher educators and the students, it was found that the majority of the modules were effective instructional materials. Most of the modules, with some revision, would be used again to prepare vocational teachers. (For specific data on the individual modules, please refer to the tables in Appendix D.)

Module Revision

Using the inputs from pre- and inservice teachers, teacher educators and other resource persons, psychometric refinements, and consultant reviews, each of modules underwent major revision of content and format. This major revision was initiated by Center program staff during the summer of 1974 with completion occurring in the spring of 1976.

Based on overall input received, seven major changes needed to be made to all modules. First, users and reviewers indicated that better directions were needed. For example, they felt that students should not be told simply to "role-play," but should be given complete directions for how to do it, including a role description to guide anyone playing a role outside his/her own frame of reference. Users had had a tendency to "get lost" in the modules because directions for where to go next after completing an activity were sometimes missing or unclear. The revised modules included complete and clear directions for how to use the modules and how to complete activities.

Directions were also improved by the addition of an overview page preceding each learning experience. Users of the preliminary test versions had indicated that they had liked being able to skim the brief explanations given for activities in a learning experience to get an idea of what was involved, and liked having each activity highlighted by an action word located in the left margin, but they also felt that the explanations of activities needed to be expanded. To meet these concerns, each learning experience was broken into two parts: (1) an overview listing the objective, and giving brief explanations (using the future tense "you will be...") of the activities and feedback involved, and (2) expanded directions for each activity following the overview. Objectives, activities, and feedback were now highlighted with specially devised symbols rather than action words. This new format also facilitated the front-to-back sequencing of materials discussed in the paragraph which follows.

Second, it was felt that front-to-back sequencing of the modules would make them easier to use. Users complained about the constant "flipping back and forth" necessitated by having the information sheets and feedback devices separate from the learning experiences in which they were to be used. In the revised modules, all activities, information sheets, and devices were sequenced in the order in which they were to be used.

Third, users and reviewers indicated that the modules should be more self-contained. Some users had had difficulty in locating and obtaining the outside references required for completion of the learning experiences. Overall, it was felt that including as much of the necessary information as possible within the covers of a module would increase its usability. Thus, with few exceptions, the revised modules contained information sheets covering the performance to be achieved, and seldom required the student to go to outside resources.

Fourth, feedback indicated the necessity for providing alternate activities when learning experiences required the use of peers (e.g., for role-playing). Some users, particularly inservice teachers, had had difficulty locating peers with whom to work. Thus, the revised modules always provided an alternate activity (often in the form of case studies to which the teacher reacts) when an activity called for working with peers.

Fifth, users and reviewers called for more flexibility and individualization in the form of optional activities. Consequently, the revised modules provided enrichment (e.g., a suggested outside reading which went into the topic in more depth) and/or clarifying activities (e.g., viewing a videotape of a teacher performing the skill; discussion of concepts with peers) for those who desired or needed them.

The sixth major change was the addition of one or two illustrations in each information sheet to provide visual reinforcement of concepts and make the module more attractive. While this addition was not specifically asked for by users or reviewers, it was felt that it was consistent with other changes made to increase module usability and clarity.

Finally, users and reviewers indicated a need for some recombination of elements. For example, it was felt that some modules within the student vocational organization category covered skills which were too minute to warrant separate modules; in this case, the number of modules in that category was reduced from 16 to 6. As a result of recombination of elements, the original 118 modules were reduced to 100. (See Appendix I for a listing of the titles and related performance elements for each version of the modules.)

Also at this time, the services of an evaluation specialist were secured to review the assessment forms within the modules, especially in terms of the effectiveness of the rating scales. The first modules had used only a YES/NO scale. The preliminary test versions used a DID NOT ACCOMPLISH/HOW WELL ACCOMPLISHED (very poor to excellent five-point scale) rating scale. In both these early versions, the items were stated as questions, sometimes leading to oversimplified items (e.g., an item on a checklist to rate someone's skill in writing a lesson plan would ask, "Did the teacher write a lesson plan?") With the help of the evaluation specialist, the format for writing items and directions for checklists was standardized, and two possible rating scales were selected: a three-point scale for use by peers or in rating tentative plans, and a five-point scale for use by resource persons and in the final assessment.

Thus, the first step in the revision process was to dummy up a new, more streamlined and attractive module format incorporating these changes. The revision procedure then continued as follows:

1. When all inputs relative to a particular module had been received by The Center, the module was assigned to a review team of three CVE project staff, including one designated revisor and at least one vocational teacher educator.
2. The designated revisor would get all materials related to that module from the revision file, check to be sure they were complete (see Module Revision Process checklist, Appendix E), and circulate the materials to each review team member before a designated meeting time.
3. Each of the three review team members would review the module independently, making annotations where necessary and assessing its adequacy using the Module Review Checklist (see Appendix E). Each member would then review carefully all materials in the revision file.

4. The review team would meet to reach consensus on the amount and type of revision needed, drawing heavily on the data and comments received from the persons involved in the preliminary testing.

5. Module revisor would make all necessary revisions to format and content, checking his/her progress against the Module Review Checklist.

6. Module revisor would circulate the completed module to all team members for review.

7. Review team would meet to (1) suggest major changes needed, (2) suggest minor changes needed, or (3) sign off on module. (Steps 6 and 7 were repeated until module was approved.)

8. The module was then proofed by an editor for format and grammar, given a content review by a teacher educator, prepared in camera-ready copy, proofed by an editor for typos, pasted up with symbols and titles, and given a final check by a teacher educator. (See Appendix E for the Module Routing Form used to monitor this final step, and for the Module Final Review Checklist used to structure the final check of the camera-ready copy.)

Refer to Appendix F for a sample of one of the modules resulting from this revision process.

Advanced Testing

Advanced formative testing of the PBTE curricula was initially planned as a portion of the scope of work to be conducted by The Center and to be followed by a refinement phase and a summative evaluation of the curricula. In the summer of 1973, upon recommendation of an evaluation panel, a decision was made by the sponsor to combine the advanced formative and summative evaluations into a single evaluation to be conducted by a third party. During the Fall of 1974, it was learned that funding would not be available for the planned third party evaluation, and The Center was requested to carry out what advanced testing could be done within The Center's existing project resources.

Resources had been allocated for trial of the modules in other selected career education settings such as a post-secondary institution and a local education agency. The Center, therefore, applied these resources to initiating advanced module testing.

For a detailed description of the advanced testing design and procedures, see Volume II of this document, Evaluation Report.

Three test sites were selected for advanced testing under NIE support, using the following criteria:

1. The administration and staff approve of and support the concept of performance-based teacher education (PBTE).
2. The state department of vocational education is amenable to the implementation of PBTE.
3. There is a history of cooperation between professional personnel in the state department of education and the university vocational teacher education faculty/local education agency.

4. There is evidence of the ability of the teacher education institution/agency to commit resources (facilities, students, and professional personnel) to this testing activity.

5. The institution/agency has demonstrated leadership in the preparation of vocational teachers.

6. The institution/agency would be willing to work cooperatively with The Center in testing the curricular materials.

7. Preliminary plans have been formulated for the implementation of PBTE.

8. Although agencies/institutions preparing teachers in a single vocational service area will be considered, preference will be given to sites where teachers in a number of vocational education areas as well as other teaching areas are being prepared.

Applications were sent to all state directors of vocational education requesting nominations. A total of 76 institutions in 35 states were nominated, and after each application was rated against the criteria, ten sites were chosen as finalists. Each of the ten sites supplied additional data, and again the responses were evaluated against the selection criteria. The three sites selected were --

1. Colorado State University/University of Northern Colorado
2. Florida State University
3. Rutgers University

Expressions of interest were received from several other institutions indicating a desire to participate with CVE in the advanced testing effort at their own expense. Using the same selection criteria, four self-sponsored sites were selected to participate in the advanced testing of the modules, with the additional criterion that all CVE costs associated with testing at these sites be borne by the site. These four sites were --

4. Temple University (6/75-6/76)
5. Holland College (P.E.I.) 5/75-7/76)
6. Ferris State College (6/75-7/76)
7. University of Michigan-Flint (7/75-8/76)

Finally, ten additional sites were added through an EPDA-funded project, National Institute for Performance-Based Teacher Education (7/75-8/76). (For a more detailed description of this project see Norton et al., 1977.) These sites, selected using criteria similar to those used for the other sites, were --

8. Central Washington State College
9. Oklahoma State University
10. State University College at Buffalo
11. University of Arizona
12. University of Minnesota-Twin Cities
13. University of Nebraska-Lincoln
14. University of Pittsburgh
15. University of Tennessee
16. University of Vermont
17. Utah State University

In January 1975, a two-day orientation and training meeting was held at The Center to prepare site coordinators and assistant site coordinators at the three NIE sites to carry out testing functions and procedures. On-site orientation, training, and planning workshops of two to three days each were held at each self-sponsored site to prepare all site teacher education personnel who would be participating in the advanced testing of the curricular materials.

In August 1975, an intensive one-week orientation, training, and planning workshop was held for site coordinators, assistant site coordinators, and state department of education representatives from each of the ten EPDA sites, followed by a two-three day on-site workshop at each site.

During this time period, a number of supporting materials were prepared, using both NIE and EPDA funds, to assist persons in using The Center's PBTE modules. Initially a single publication "Orientation to Modularized Instruction Booklet" was planned for use by both teacher educators and teacher trainees. Early experience in use of the PBTE materials indicated considerable difference in needs of these groups; therefore, CVE proposed and NIE concurred that separate guides be developed.

NIE Funding

Resource Person Guide to Using Performance-Based Teacher Education Materials

Student Guide to Using Performance-Based Teacher Education Materials

Module Development Handbook

EPDA Funding

Guide to the Implementation of Performance-Based Teacher Education

Performance-Based Teacher Education: The State of the Art--General Education and Vocational Education

The state-of-the-art report dealt with the philosophical bases of PBTE and attempted to describe the PBTE movement as it was at that stage of its development. Persons involved in testing the modules could use this document to gain background knowledge about PBTE.

The implementation guide was designed to help persons who are charged with administering a PBTE program. The guide discusses the various areas a prospective implementer must consider in planning for change to PBTE, raises questions to be answered, and suggests possible strategies for change.

The resource person guide and student guide were designed to help persons in PBTE programs adapt to their new roles and effectively use The Center's modules. These two documents can be used for orientation and training purposes.

Finally, the *Module Development Handbook* was designed to help people using The Center's modules, and others, to develop their own modular materials to fit special needs locally. It was decided, however, that the *Module Development Handbook* should not be released at this time due to the fact that potential commercial publishers of the module series might view the *Module Development Handbook* as encouraging development of competitive materials.

These materials were developed by fall of 1975 and were used to assist persons involved in the advanced testing to orient personnel, use modules effectively, and begin implementing PBTE programs on a limited scale.

Another method used to ensure that the modules were used effectively was to provide persons involved in the testing with a clearcut list of module testing procedures. General procedures for module use specified that no changes could be made in the curricular materials, but that each site could establish their own priorities for teacher competencies, and select and test those modules which best met the unique needs of the institution and the pre- and inservice teachers being prepared. In addition, each test site was at liberty to select a pattern of PBTE implementation consistent with the unique needs, constraints, and commitment of the institution.

Testing guidelines (see Volume II, Appendix H) further specified how data would be gathered relative to the testing efforts. Once a site had selected the modules it wished to test, it was preferred that a minimum of ten pre- and/or inservice teachers (volunteers) representing a variety of service areas would test each of the modules selected. Center staff hoped to get feedback from a minimum of twenty users for each of the 100 modules, but ideally, more widespread usage of each module was desired.

Data was gathered via four devices using the following procedure. A student wishing to complete a particular module would first complete an Estimate of Performance form (see Volume II, Appendix C) to document their perceptions concerning how well they could perform the skill prior to starting work on the module. An Estimate of Performance (EOP) form was developed for each of the 100 modules with items specific to each module. Basically, each EOP contained three items: one requiring the respondent to rate how well (poor, fair, good, excellent) he or she feels he/she could perform certain key tasks necessary to effectively perform the skill covered by the module in question; one asking how many times the respondent had already performed that skill in an actual school situation; and one asking for an overall assessment of how well he/she could perform the skill. Once completed, the EOP was stapled shut and filed; it was confidential data and, as such, was not reviewed by the resource person.

Next, the resource person would guide the user through the module, and evaluate the student's performance in an actual school situation using the Teacher Performance Assessment Form (TPAF) which is the last evaluation device in each module (see Appendix F, sample module, pp. 49-53). The TPAF would then be removed from the module, stapled, marked with identifying information, and filed with the EOP.

A second EOP would then be administered to the module user as a post-test to determine his/her own perceived level of competence after taking the module. And, the user would also complete a Teacher Trainee Feedback Booklet (TTFB) (see Appendix G) for each module he or she completed. Items in this booklet were designed to provide Center staff with feedback concerning the kinds of persons who used the module, how well the module met their needs, and what specific strengths and weaknesses were present in the module. Additional comments were also encouraged.

Finally, after all interested pre- and inservice teachers had completed a given module, the resource person who had directed their module activities would complete a Resource Person's Feedback Booklet (RPFB) (see Appendix G). Items in this booklet were designed to provide Center staff with feedback concerning the kinds of persons who served as resource persons, the ways in which the module was used, and the effectiveness of the module.

The test materials for each module tested were then assembled and sent to The Center for tabulation. Assuming that a resource person tested the module with ten pre- and inservice teachers, the assembled package would contain the following completed forms: 20 EOP's (10 pre, 10 post), 10 TPAF's, 10 TTFB's, and 1 RPFB.

From 1975 through 1976, advanced testing of the materials was conducted at the 17 sites, representing wide geographic areas and settings as well as several differing PBTE program structures. Over 2,500 preservice and inservice teachers and over 250 resource persons participated in the testing and provided feedback to The Center. This feedback was summarized in several ways for several uses, using a computer program. Detailed information about this data summarization/analysis process is available in Volume II of this document, Evaluation Report.

Products of the summarization and analysis process included computer generated revisors reports which were produced for each of the 100 modules. These reports summarized all of the numeric data for the advanced testing of each module and in addition included written comments of up to 100 teacher trainees and all resource persons relative to each individual item on the feedback forms. (See Appendix G for a sample of one of the 100 Revisor's Reports.)

Contractual Agreement with Publisher

Before the refinement of the 100 modules could be completed utilizing the feedback from the advanced testing, an agreement needed to be reached with the publisher who would handle the modules so the publisher's needs could also be met in the refinement procedures (format specifications, quality of copy needed, etc.).

In an effort to determine market potential of the PBTE curricular materials, The Center's Product Utilization Section conducted a market survey (Barton and Budke, 1974) of major potential users of the modules. This survey, completed in 1974, requested data from a sample of 845 potential users of the materials in four-year institutions, state departments of education, and postsecondary institutions. Based upon a 28% response of the sample, approximately three-fourths indicated that PBTE programs were operational or in the planning stage while one-fourth indicated that they had no plans for PBTE. Detailed estimates of individual module use were obtained by user group as well as the indication that most respondents planned to place orders for materials the year following the survey. For a detailed description of the survey and its findings please see the report itself.

In the Fall of 1974, a Request for Proposal (RFP) for commercial publication of the performance-based vocational teacher education materials was developed by The Center's Product Utilization Section. An announcement regarding the PBTE materials and the intent to obtain commercial publication of the materials was also developed as a Publishers Alert Service flyer which was mailed to commercial publishers in May 1975. A total of seven agencies requested copies of the RFP. Although no proposals had been received by the deadline date of June 30, 1975, several requests were received for additional time to examine the materials and prepare proposals. The deadline date was therefore extended to August 15, 1975. Only one company, the McGraw-Hill Book Company, responded with a proposal. Negotiations with McGraw-Hill began in the Fall of 1975 and proceeded slowly but encouragingly until spring of 1976 when McGraw-Hill, in final consideration of the proposed agreement which had been developed, determined that the warehousing of that many separate documents would be impractical and, thus, that they would publish the 100 modules only if they were combined into twenty books. Center staff were not receptive to this drastic change and its potential damaging effects upon the flexibility and the individualized nature of the products. However, at the request of McGraw-Hill, Center Staff and McGraw-Hill staff cooperatively conducted a structured telephone survey of current users of the advanced test version of the materials to determine effects of combining modules into books. Results of this survey showed user reaction to be extremely negative toward this approach and that potential sales of materials would be greatly reduced. As a result of the survey findings, The Center and McGraw-Hill terminated negotiations by mutual agreement.

Members of the program staff, who had previous experience in the use of their vocational instructional materials, contacted the American Association for Vocational Instructional Materials (AAVIM), and found high interest in publishing the PBTE materials. Negotiations proved highly successful, and a publication agreement with AAVIM was completed in the Fall of 1976.

Also in the Fall of 1976, selected Center staff visited AAVIM and reached tentative agreement with their staff concerning module format, and guidelines and procedures for delivering modules to the publisher. A single module was laid out by AAVIM staff, modified in cooperation with Center staff, and plans for publication procedures were finalized.

Module Refinement

Refinement of the modules was based on feedback from the advanced testing and on the needs of the publisher. (It should be noted that by working with a small, nonprofit, educational publisher such as AAVIM, The Center had far more control over the shape of the final product than is usually the case in agreements between publisher and author.)

For the most part, the changes suggested by the advanced testing data were minor: adding examples to an information sheet, expanding on a particular explanation, rephrasing a self-check item, reducing the length of a checklist, etc. Based on feedback alone, the modules appeared to be reasonably acceptable. In reviewing feedback from a sampling of modules across categories, the one major change suggested was related to the front matter in each module. Persons testing the modules were concerned with a number of areas in this section as follows:

> The number of prerequisites listed were often unrealistic. A large number of prerequisites was intimidating to a potential user and, in addition, it was frequently found that the module could be successfully completed without all the prerequisites listed.
>
> The contents page was not perceived as being particularly helpful.
>
> The citation of the performance element number(s) on the title page was meaningless to pre- and inservice teachers. No indication was given in the module of what this number referred to, or where it came from.
>
> The Module Structure and Use section was frustrating to many users. Information about the specific module being completed (objectives to be achieved and resources needed) was interwoven with module terminology and directions on how all modules were organized and should be used -- information needed only for the first few modules to be completed.

Consequently, the contents page was eliminated, and review teams for each module spent considerable time attempting to justify each prerequisite cited and eliminating those which were not absolutely essential. And, the "front matter" was drastically reorganized. A foreword was developed for the inside front cover to provide the user with background information about the research base and development of the entire series of modules and supporting materials.

Information specific to the module (objectives, prerequisites, resources) was left on the page(s) immediately preceding the first learning experience. This section, now called the About This Module section, also includes two footnotes: (1) one citing the performance element(s) covered in the module, and referring the reader to the document containing a listing of all 384 performance elements; and (2) one referring the reader who needs general information on module use to the inside back cover.

On the inside back cover, the reader would find information common to all modules in a section entitled About Using The Center's PBTE Modules. Included are (1) information on how modules are organized, (2) procedures for completing modules effectively, (3) terminology used in the modules, and (4) explanations of what the various ratings on the checklists mean. Based on formal and informal feedback, both the Organization and Procedures sections were revised somewhat from those contained in the original Module Structure and Use section.

Changes which occurred as a result of working with a publisher concerned format and were very minimal since testing feedback indicated that the format was quite usable. In the advanced test version, however, different colors of paper were used to differentiate sections of the module: white paper for the front matter and final experience, ivory paper for odd-numbered learning experiences, and blue paper for even-numbered learning experiences. In the published version, all pages are white, but each category has an internal color designated and this color is used to screen overviews, samples, acceptable performance rating columns, and as tabs on the margins of the pages so that each learning experience can be easily located by thumbing through the module. Published modules are also three-hole punched and pages are perforated so checklists (and other materials) can be removed for ease of use. Finally, lengthy information in the published modules (e.g., information sheets) was set in two columns. This change required the paragraph length to be shortened, often substantially, to avoid huge blocks of copy. Thus, what was one paragraph in an advanced test version could be split into two or three paragraphs in the published version.

A number of other changes were made based on inputs from Center staff. Having been involved in the writing and testing of the modules for a number of years, the staff had developed a high level of sophistication concerning the production of such materials and, with so many years of work at stake, staff felt a need for the maintaining a uniformly high level of quality in the final product.

Consequently, two staff members developed a Module Refinement Handbook (Quinn and Harrington, 1976) to be used to govern grammar, style, and format during the revision process. Second, all program staff met to review each module title in terms of (1) how well it communicated, (2) how accurately it paralleled the contents of the module, and (3) how many words were used to communicate that content. As a result of this review process, a number of titles were modified (see Appendix I).

Third, a member of the staff selected sample passages from the information sheets in each module and used the cloze reading formula to determine the reading level at which they were written. Since these modules are designed for a wide variety of persons, it had been stressed continually by users that the reading level should be targeted for the seventh to ninth grade range. Results of these analyses indicated that most information sheets were still written at one to two grade levels above this range.

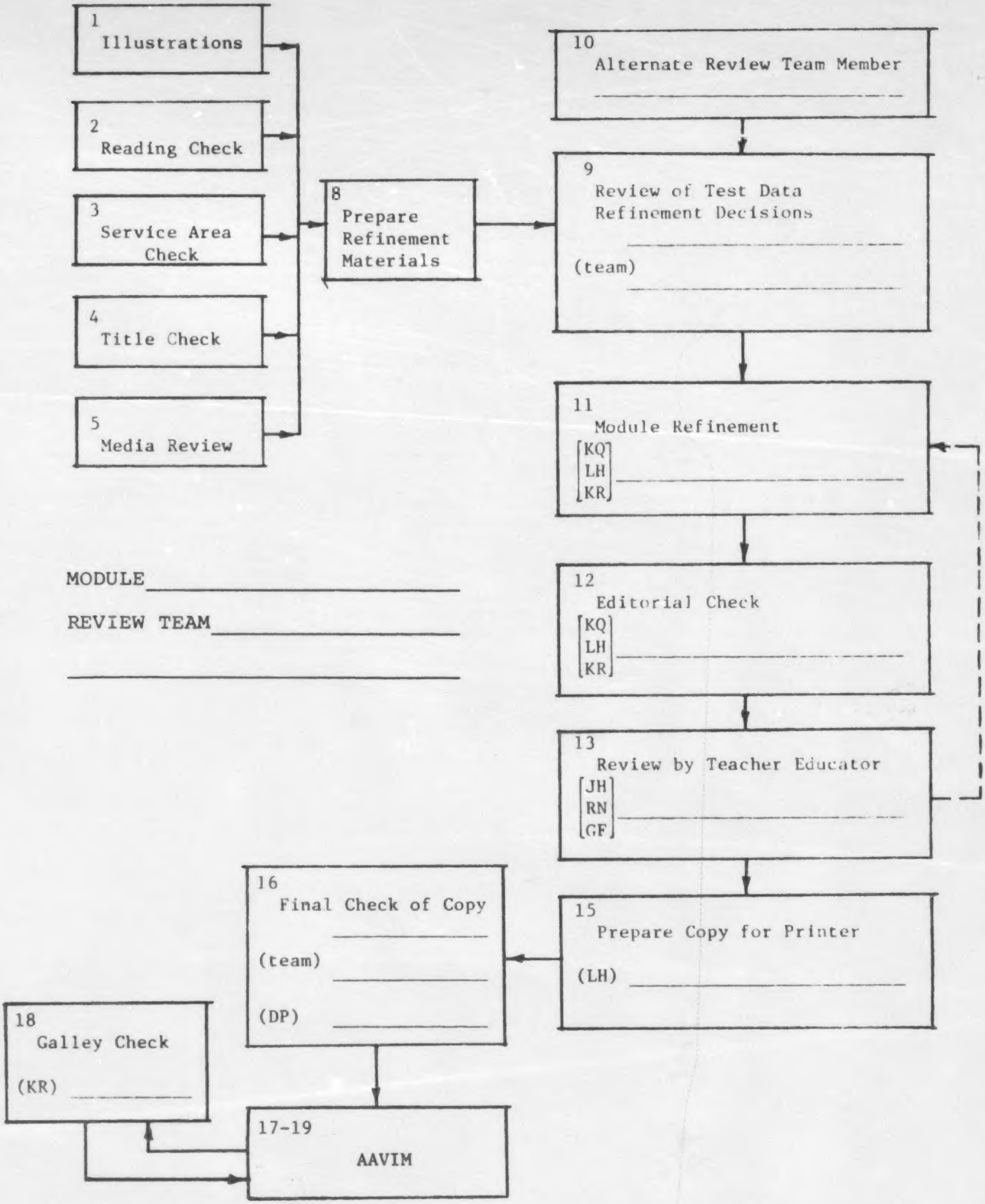
Fourth, because the modules were designed for use by both secondary and post-secondary audiences, by both pre- and inservice teachers, and by teachers of all vocational service areas, it was important that written examples and case studies include all these groups. A staff member surveyed all 100 modules and kept a tally of the number of times each group was mentioned. The results of this survey indicated that representation of vocational service areas was satisfactory; however, the modules tended to speak to the secondary teacher level only.

Finally, an artist was hired to provide illustrations for each module. These were to be designed to break up the printed copy, making the modules easier to read and visually more appealing. They would further serve to add variety, interest, and some humor to the topics covered. Perhaps most important, the illustrations would be used to emphasize key points and increase the visual impact of the materials.

A master file of refinement materials had been arranged. Within this file could be found a file folder for each module, containing (1) a copy of the advanced test version of the module, (2) a computer printout of the Revisor's Report which included a summary of all test data and a large sampling of the written comments provided on the feedback instruments, (3) illustrations for the module, (4) data from the reading level checks, (5) data concerning the evenness of coverage of all service areas, and of both secondary and post-secondary situations, and (6) any other related materials received from the test sites or discovered by Center staff (e.g., suggestions regarding an excellent resource which should be included as an optional reading in the module).

The procedures for refining and publishing the module were as follows (see Figure 4 for a graphic representation of these procedures):

1. Module was assigned to review committee of two persons: one refiner and one teacher educator.
2. Each committee member independently reviewed the advanced test version of the module, the materials in the refinement file, and the performance elements for the module.
3. A review meeting was held by the committee to determine what changes needed to be made to the module (e.g., what changes are called for in the feedback both from the sites and from the analyses conducted at The Center?...are all performance elements adequately covered?...is the content in the information sheet(s) adequate, accurate, up to date, and consistent with information in other modules?... are the activities adequate?...are the feedback devices adequate?...is the final experience set in an actual


1
Illustrations
2
Reading Check
3
Service Area Check
4
Title Check
5
Media Review
8
Prepare Refinement Materials
10
Alternate Review Team Member
9
Review of Test Data Refinement Decisions
(team)
11
Module Refinement
KQ
LH
KR
12
Editorial Check
KQ
LH
KR
13
Review by Teacher Educator
JH
RN
GF
15
Prepare Copy for Printer
(LH)
16
Final Check of Copy
(team)
(DP)
18
Galley Check
(KR)
17-19
AAVIM

MODULE ____________________________

REVIEW TEAM ________________________

____

Figure 4. PBTE Module Refinement Procedures

school situation and is it realistic to require a pre- or inservice teacher to complete the activities required in this experience?...are the illustrations satisfactory quantitatively and qualitatively?) A detailed outline to guide reviewers during this step was provided in the Module Refinement Guide.

4. The refiner made all changes decided on by the committee on a xeroxed copy of the advanced test version of the module. In addition, all appropriate changes were made in style/format in accordance with the guidelines provided in the Module Refinement Guide.

5. Refined module was given to another staff member for a close editorial check.

6. Refined module was given to the other member of the review committee (the teacher educator) for content review. If further changes were needed, steps 4, 5, and 6 were repeated until the module was satisfactory to all three parties.

7. Refined module was sent to the staff member who served as liaison person with the publisher. This person posted all changes made on a fresh copy of the module so they could be easily read by the typesetter, indicated placement of illustrations and samples, made tentative layout suggestions, and specified type sizes.

8. Module as prepared by liaison person was returned to the refiner for a final check of content, etc.

9. Prepared module was given to another staff member for a final check of the specifications included for the publisher, of the overall layout, and of the accuracy of the module symbols used in the learning experiences to differentiate activities.

10. Module and illustrations were sent to the publisher.

11. Publisher marked copy with more complete specifications for the typesetter.

12. Module was sent to the typesetter.

13. When module came back from the typesetter to the publisher, a mock-up was prepared.

14. Copies of the mock-up and galley were sent to The Center for careful review by at least one person.

15. Marked copies were returned to the publisher to be reset and laid out in final form.

16. Final layout of module was sent to the printer and a blue line was prepared.

17. Copies of the blue line were sent to The Center and the publisher for final check.

18. Any final corrections were made by the publisher, the module was returned to the printer to be printed, and finally, it was returned to the publisher for sale and distribution.

The 100 modules and four supporting documents were refined and delivered to the publisher during the period from September 1976 through September 1977. Incremental release of the published materials was begun in March 1977, with release of the last materials projected for March 1978.

Dissemination Activities

Activities to create interest and awareness on the part of potential users of the PBTE products were an ongoing portion of the scope of work from initiation of cooperative development through completion of the project. Displays and exhibits at conventions and professional meetings, staff presentations, mailed brochures, and articles in professional journals and Center publications have served as the major means of creating product interest and awareness.

The overall plan for cooperative development and field testing of the materials was designed to foster awareness, interest, and adoption of the curriculum. Announcements and requests were made to all states for nominating of institutions for participation with The Center in the cooperative development phase of the project. A selection process utilizing competitive application was followed in final site selection. In preparation for advanced test site selection, a similar process was utilized which alerted all states and many institutions to the curricular materials and involved many institutions in the application and competitive selection process. Involvement of self-sponsored sites in the advanced testing phases of the project further enhanced implementation of the curricular materials. Two projects, National Institute for PBTE--Part I and Part II, sponsored by the U.S. Office of Education EPDA 553 have played a significant role in the dissemination of the curricular materials. The first phase of the National Institute for PBTE involved 10 sites, one representing each of the USOE Regions, in training for use of the materials and in the advanced testing of the materials. Again, a process of announcement to each state, nominations of appropriate institutions, and competitive application and selection was utilized. Several of these sites have provided leadership on regional and state bases in orienting and training personnel of other institutions to implement PBTE programs utilizing The Center's PBTE curriculum materials. (Sites participating with The Center in the development and testing were listed earlier in this report.)

In the second phase of the National Institute for PBTE, emphasis was placed upon training key personnel in each of 25 sites to plan and implement PBTE programs and to train others in their own institutions, and in other institutions within their respective states as well, to conduct PBTE programs. Once again a similar procedure of announcements to all states, nominations, and competitive applications were utilized in the selection process. The following institutions were those selected for participation in the second phase of the National Institute for PBTE:

Appalachian State University
Boone, North Carolina

Brigham Young University
Provo, Utah

Central Connecticut State College
New Britain, Connecticut

Central State University
Edmond, Oklahoma

Cullman County Area Vocational Center
Cullman, Alabama

Eastern New Mexico University
Portales, New Mexico

Federated Universities of North Texas Area
Richardson, Texas

Indiana University
Bloomington, Indiana

Iowa State University
Ames, Iowa

Michigan State University
East Lansing, Michigan

New York Institute of Technology
Old Westbury, New York

Ohio State University
Columbus, Ohio

Pennsylvania State University
University Park, Pennsylvania

Purdue University
West Lafayette, Indiana

State University College at Utica/Rome
Utica, New York

Suburban Hennepin Technical Center
Eden Prairie, Minnesota

University of Kentucky
Lexington, Kentucky

University of Louisville
Louisville, Kentucky

University of Minnesota-Duluth
Duluth, Minnesota

University of New Hampshire
Durham, New Hampshire

University of Rhode Island
Kingston, Rhode Island

University of South Dakota
Springfield, South Dakota

Virginia Polytechnical Institute and State University
Blacksburg, Virginia

Western Michigan University
Kalamazoo, Michigan

Westfield State College
Westfield, Massachusetts

Although these funded projects have ended, a cadre of trained experienced personnel is available and is being utilized by other institutions to provide orientation and training in the use of the PBTE curricular materials.

A third EPDA 553 funded project is currently in progress in which The Center is working closely with five Leadership Sites chosen from among the 42 sites which had previously worked with The Center on the PBTE curricula. This project focuses on identifying and seeking solutions to specific problems associated with implementing PBTE programs at these sites more fully during the academic year. Results of these efforts will then be shared with the selected sites in a dissemination workshop. The five Leadership Sites participating with The Center in this project are:

Purdue University
State University College at Utica/Rome
Temple University
University of Rhode Island
Utah State University

During the summer of 1977, The Center conducted two cost-recovery workshops in planning and implementing PBTE programs. One of these workshops was designed specifically for college and university vocational teacher education personnel, while the other was geared for post-secondary and local education agency staff development personnel. Experience with these two workshops, and with a similar workshop attempted prior to the American Vocational Association Convention, has shown that requiring participants to pay their own travel and per diem expenses, plus a substantial fee to defray all costs of conducting the workshop, severely limits participation.

The Center has also carried out PBTE orientation and training under technical assistance agreements with institutions and agencies. Under one such agreement, a USOE Regional Workshop on PBTE was conducted and, under another, training and assistance were provided to a local education agency in designing and implementing an inservice performance-based staff development program.

Following is a summary of the numbers of persons oriented and trained to use The Center PBTE curricula and numbers of teachers in training who have been involved directly as a result of The Center's efforts in conducting the training and dissemination efforts discussed above*:

Number of individuals receiving resource person training	912
Number of additional persons receiving awareness training only	2,251
Number of teachers involved in module use (preservice 2,570 inservice 2,910)	5,480

It should be noted that these numbers reflect only the primary efforts of The Center in working with sites in the above described activities. No attempt has been made to collect, summarize, and report here, data regarding secondary efforts of these sites as they have conducted PBTE orientation and training activities on regional, state, and individual institution bases.

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*Numbers of individuals involved in the current EPDA 553 project "Implementing Performance-Based Teacher Education" are not included.

Since publication of the final version of the first of the PBTE modules in December 1977, the publisher has actively promoted the materials. An announcement brochure has been developed by the publisher (see Appendix H). This brochure and complimentary copies of a sample module have been made available in quantity for use by Center staff and site personnel. The publisher has also developed a Module Availability and Order Form which is updated periodically as more of the materials are published.

In cooperation with The Center, the publisher has developed a mailing list of over 6,000 teacher educators, administrators, and staff development personnel who are potential users of these products. The announcement brochure and a sample module have been provided to each of these 6,000 individuals, and at least two editions of the Module Order and Availability Form have been sent to each person. Three additional mailings will be made to these persons over a period of the next six months.

Center experience with testing and implementation sites has shown a continuing need for orientation and training in the use of the PBTE materials for successful implementation. The Center will continue to seek support for such training efforts necessary to maximize returns on the professional investment and the improvement of teacher preparation which can now be a reality through implementation of these curricular materials.

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APPENDIX A

Sample Module
Cooperative Development Stage
(123 modules)

DEMONSTRATE A MANIPULATIVE SKILL

PREREQUISITES:

1. Element 39. Write student performance objectives for the vocational education offering.
2. Element 72. Write a lesson plan.
3. Element 76. Develop original instructional materials such as individualized related assignment sheets, transparencies, charts.

DIRECTIONS:

1. Check to see that you have satisfactorily completed all prerequisites.
2. Read the introduction and study the performance objective.
3. Take the pre-assessment. If you successfully complete the pre-assessment, you may choose not to complete this module.
4. If you plan continued study of this module, proceed in a chronological sequence beginning with the learning experiences that follow the pre-assessment.

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INTRODUCTION

The ability to effectively demonstrate a manipulative skill is one of the most important teaching competencies to be mastered by the vocational teacher. It is a teaching technique which will provide information, create interest, and develop standards of quality for the work being done.

A demonstration is more than simply showing students how a job should be done. It should be planned and executed so as to help the student understand the necessary procedures.

This module will give you the opportunity to learn and apply techniques which are necessary in effectively demonstrating a manipulative skill. You will be able to practice the demonstration techniques with manipulative skills from your area of specialization. Your practice demonstrations will be evaluated using the same criteria as the evaluation of your post-assessment.

PERFORMANCE OBJECTIVE

Given the proper setting (equipment, materials, supplies, and audience) and time to prepare, you will be able to demonstrate a manipulative skill in accordance with the criteria specified on the module Checklist (page 8). The lowest level of acceptable performance will be 23 out of 23 as judged by the teacher-educator.

PRE-ASSESSMENT

Your pre-assessment consists of actually planning and presenting a demonstration of a manipulative skill. Report to your teacher-educator for help in determining a skill to demonstrate and for the necessary materials and equipment. Also, schedule a time for your presentation to a small group.

Write out the performance objective of your demonstration and the steps necessary to reach that objective. Remember, a demonstration does not have to be long to be effective; but to be effective, it must be well planned and executed. The lowest level of acceptable performance in accordance with the criteria specified in the module Checklist (page 8) is 23 out of 23 as judged by the teacher-educator.

LEARNING EXPERIENCES

1. A demonstration is successful only to the extent that students learn from that demonstration. With this goal in mind, let's examine the qualities and techniques which contribute to an effective demonstration. This can provide a set of criteria toward which you may strive and that will provide a basis for self-criticism and self-help.

Vocational teachers for many years have been using a pattern around which any lesson may be outlined and taught. The following four steps are involved:

Step One: Preparation

The instructor assembles all materials, supplies, and equipment for the lesson. Then he must arouse the students' interest in the lesson. This includes writing the lesson plan and student performance objectives.

Step Two: Presentation

The instructor demonstrates and explains exactly what is to be learned.

Step Three: Application

The student performs, with the assistance of the instructor, the operations to be learned.

Step Four: Testing and Follow-up

The student performs the operations by himself and is checked for efficiency and skill by the instructor.

You will find it desirable to plan each lesson around these four steps, and then to follow them closely as you teach the lesson. With practice these steps will become second nature. The skillful instructor synchronizes these steps into a unified whole. The criteria included in each of the four steps will now be discussed more fully.

Activities

1. Read the Checklist (pages 8 and 9).

2. Complete the self-instruction booklet How to teach a Performance-Demonstration Lesson, Part I. Study for understanding of the items listed on the Checklist.

CHOOSE ONE

2A. Read The Instructor and His Job, pages 116-135. Read for understanding of the items listed on the Checklist.

2B. Read Audiovisual Methods in Teaching, pages 272-295. Read for understanding of the items listed on the Checklist.

3. Review the Checklist (refer to Activity No. 1, page 3). If you feel there are criteria which you do not understand, contact your teacher-educator for an explanation.

References specific to service areas

If you would like information about demonstrations relative to a particular service area, select the appropriate reference listed:

- Agriculture Education:
  O'Brien. Demonstrations for Farm Mechanics, pages 9-16.
- Business Education:
  Stroop. The Balance Sheet, October, 1967, pages 58, 59+.
- Health:
  Pohl. Teaching Function of the Nursing Practitioner, pages 75-78.
- Home Economics Education:
  Allgood. Demonstration Techniques, pages 14-36.
- Trade and Industrial Education:
  Kidd and Leighbody. Methods of Teaching Shop and Related Subjects, pages 41-61.

---

2. You should now have an understanding of the criteria which contribute to an effective demonstration. Remember, these criteria are the ones on which your demonstration will be evaluated. To enable you to visualize these criteria as carried out by someone proficient at demonstrating, such as your teacher-educator or someone designated by him, select one of the following

activities and rate the demonstration on the Checklist.

Activities

┌── 1. Observe and evaluate a "live" demonstration.
CHOOSE
ONE
└── 1A. Observe and evaluate a videotaped demonstration.

---

3. The only step lacking now is for you to actually practice planning and demonstrating a skill. Determine a skill pertaining to your service area which you would like to practice demonstrating and then report to your teacher-educator for his approval. You should then secure the necessary materials and equipment. Write out the performance objective of your demonstration and the steps necessary to reach that objective.

Practice the demonstration until you feel confident enough to present it to a small group. You may also want to videotape your demonstration. To provide evaluation and feedback on your performance, select one or more of the following routes:

Activities

1. Contact your teacher-educator to arrange for a small group to observe, evaluate, and critique your demonstration. Collect and analyze the Checklists to determine the areas needing improvement.

1A. Videotape your demonstration. Observe the taped presentation and evaluate yourself using the Checklist. Study the Checklist to determine the areas needing improvement.

1B. Videotape your demonstration. Ask at least two other people to observe, evaluate, and critique the taped presentation. Study their evaluation to determine the areas needing improvement.

When you feel you are ready, contact your teacher-educator for permission to complete the post-assessment.

POST-ASSESSMENT

Proceed as directed in the pre-assessment (page 1). If you and your teacher-educator agree, you may demonstrate the same skill you have been practicing or the one you used for your pre-assessment.

If you do not achieve the minimum level of performance in accordance with the criteria specified on the module Checklist of 23 out of 23 as judged by your teacher-educator, examine your completed Checklists and concentrate further practice in the areas needing improvement.

REFERENCES

Allgood, Mary Brown. Demonstration Techniques. Englewood Cliffs: Prentice-Hall, 1959, pp. 14-36.

Dale, Edgar, Audiovisual Methods in Teaching. New York: Holt, Rinehart, and Winston, Inc., 1969, pp. 272-295.

Hodges, Lewis H. How to teach a Performance-Demonstration Lesson, Part I. Chicago: American Technical Society, 1969, 28 frames.

Kidd, Donald, and Leighbody, Gerald. Methods of Teaching Shop and Related Subjects. Albany: Delmar, Inc., 1955, pp. 41-61.

O'Brien, Michael. Demonstrations for Farm Mechanics. Danville: Interstate, 1957, pp. 9-16.

Ohio State Department of Education, Trade and Industrial Education Service. Instructor Training for Supervisory Personnel, Leaders Manual, Unit 3-Teacher Aid #11.

Pohl, Margaret. Teaching Function of the Nursing Practitioner. DuBuque: William Brown, Inc., 1968, pp. 75-78.

Rose, Homer C. The Instructor and His Job. Second Edition, Chicago: American Technical Society, 1966, pp. 116-135.

Stroop, Christine. "Recipe for a Demonstration." The Balance Sheet, October, 1967, pp. 58+.

Only one copy of the Checklist is included in this module. Make as many additional copies as you need.

Demonstrator____________________________

Skill being demonstrated______________

Score__________________________________

CHECKLIST

Directions: Opposite each item, place a check (✓) in either the "Yes" or the "No" column to indicate your opinion of that aspect of the demonstration. Additional remarks and/or suggestions may be made in the "Remarks" column. Score one point for each "Yes" check.

	YES	NO	REMARKS
A. GETTING READY			
1. Was a lesson plan prepared?	( )	( )	
2. Were tools, equipment and materials all in readiness?	( )	( )	
B. The Four Basic Steps:			
PREPARATION			
3. Were the learners in proper position for instruction?	( )	( )	
4. Was a clear statement made of what was to be learned?	( )	( )	
5. Did the instructor link up with the learners' experience?	( )	( )	
6. Was the learners' interest stimulated?	( )	( )	
PRESENTATION			
7. Was the instruction presented in an orderly, step-by-step manner?	( )	( )	
8. Was the instruction kept at the learners' level?	( )	( )	
9. Was the content reasonable in amount?	( )	( )	
10. Were safety precautions emphasized?	( )	( )	
11. Were key points stressed?	( )	( )	
12. Could all learners see and hear the instruction properly?	( )	( )	

	YES	NO	REMARKS
PRESENTATION (Continued)			
13. Was proper use made of visual aids?	( )	( )	
14. Was the presentation complete?	( )	( )	
15. Were questions encouraged?	( )	( )	
APPLICATION			
16. Were the achievement standards expected of the learners clearly stated?	( )	( )	
17. Was adequate practice by the learners provided for?	( )	( )	
18. Was the demonstrator's attitude exacting yet friendly and patient?	( )	( )	
19. Were the learners' errors properly corrected?	( )	( )	
20. Were the learners checked at key points of the procedure?	( )	( )	
21. Was assistance provided when needed?	( )	( )	
TESTING AND FOLLOW-UP			
22. Were the learners given the opportunity to work independently?			
23. Were the learners commended for accomplishment?	( )	( )	

Evaluator_________________________ Number of "Yes" checks________________

Demonstration performed under actual simulated teaching conditions. (circle one)

APPENDIX B

Sample Data-Collection and Synthesis Forms

93

2/27/72

REVIEWS--MODULE #113, "DEMONSTRATE A MANIPULATIVE SKILL"

The following list of comments was compiled from the reviews by the three sites. Based on these comments, the module was revised by the Columbus site.

Prerequisites: Not Needed

Performance Objectives: One objective inadequate. Need enabling objectives. Also need a terminal objective which specifies conditions in the "real world" setting. Need to include affective domain objective(s).

Level of performance--23 out of 23 not practical (need graduated scale)--suggest critique form from micro-teaching study be used.

Pre and Post-Assessment: Should be the same.

Learning Experience:

I. Suggest elimination of the 4-step method. Readings vary too much in content. Some went beyond content needed for the module. Not necessary to cite a source for each service area--instead suggest the student seek additional resources on his own (e.g., resource person, library, etc.)

II. No self-evaluation.

Need another learning experience keyed to terminal objective in "real world" setting.

CVTE
4/26/72

SYNTHESIS OF REVIEWS

MODULE #113, DEMONSTRATING A MANIPULATIVE SKILL

Oregon Faculty

The module indicates there will be learner application of the skill for feedback purposes yet doesn't take the teacher beyond the point of demonstrating.

Performance objective criteria is too high. 23 out of 23 is unrealistic.

23 out of 23--realistic?

Five steps not four.

Six steps not four.
Step one: Write student performance objectives.
Step two: Write the lesson plan.

Five steps not four.

Should there be some form for students to rate the demonstration's effectiveness from this point of view.

Missouri Faculty

Suggest a video tape be made prior to live demonstration.

23 out of 23 is too high on performance.

Content of checklist needs revising! Example: Were the learners in proper position for instruction? "What the h--- is proper position?"

Limited concept of a demonstration.

23 out of 23 too high.

23 out of 23 implies that all of the checklist items pertain to each task demonstrated. This would be subject to serious question because shorthand techniques do not include safety implications.

Use of term "task" would be more broadly applicable instead of the terms "operations" and "jobs."

A film or videotape with one or more models of demonstration would be most helpful.

The sections "Application" and "Testing and Follow-Up" of the checklist go beyond the scope of the module.

Columbus Project Staff

Prerequisites are not essential.

Introduction: Question use of the word "job" in paragraph 2, sentence 1.

Performance Objectives: Objective does not specify conditions in real world setting with real students.

23 out of 23 not practical--need to specify certain criteria or to use graduated scale.

Need enabling objectives.

Affective domain only shown in checklist.

Use checklist from micro-teaching study.

Pre and Post-Assessment: Should be the same. Use title of "Resource Person" not "Teacher Educator."

Learning Experiences: The discussion of the 4-step method does not apply.

Readings vary too much. Dale's is too deep--use as optional reading. Not necessary to cite source for each service area. "How to teach a Performance Demonstration Lesson" is not available.

No self-evaluation after first learning experience.

Need another learning experience--one in "real world."

Based on the reviews by the three sites, the following changes are to be made:

Prerequisites: eliminate

Performance Objectives: Add enabling objectives. Need a terminal objective which specifies conditions in the "real world." Include affective domain objective. Change level of performance to graduated scale.

Pre and Post-Assessment: Should be the same.

Learning Experiences: Eliminate discussion of 4-step method. Instead of citing source for each service area, suggest student seek additional resources on his own. Add more self-evaluation. Include another learning experience keyed to terminal objective in "real world."

CHECKLIST FOR REVIEW OF COMPLETED/REVISED MODULE

MODULE TITLE: ______________________________ DATE REVIEWED: __________

REVIEWED BY: ____

During revision:

☐ 1. Module delivers on objectives.

☐ 2. Module meets "new format" specifications.

☐ 3. Module is internally consistent (performance objectives, directions within learning experiences, evaluation instruments, etc., do not contradict each other, directly or indirectly).

☐ 4. Each learning experience contains no more than 30 pages of reading.

☐ 5. Each learning experience contains no more than 3 references.

☐ 6. References are up-to-date (published since 1960, unless earlier resources can be justified).

☐ 7. Learning experiences are realistic, can be used by learner without placing undue burden on resource person (e.g., module avoids sending learner into real world, except optionally, prior to final learning experience).

☐ 8. Module provides optional and alternate learning experiences where appropriate.

☐ 9. Final learning experience requires performance in an actual school situation.

☐ 10. Evaluations provide for recycling if level of performance is not met.

☐ 11. Resources, examples, case studies, etc., provide for service area representation or across the board use.

If revised:

☐ See 1-11 above.

☐ Reviewers' comments have been considered in the revision.

☐ Useful original content was not tampered with.

☐ Decisions to ignore certain comments or change original content can be justified on the basis of site and/or Columbus reviews.

CVTE MODULE REVIEW REPORT

Module No. ______________________ Date Reviewed ____________________

Review Team: ____

____

____

☐ MODULE NEEDS REFINEMENT	PAGE(S)
☐ spelling errors	______
☐ grammatical errors	______
☐ punctuation errors	______
☐ inconsistent terminology	______
☐ awkward sentence structure	______
☐ format inconsistencies	______
☐ inappropriate prerequisites	______
______________________________	______
______________________________	______

Comments: ____

____

____

____

____

☐ MODULE NEEDS MINOR REVISION	PAGE(S)
Introduction	
☐ Does not define terms	______
☐ Does not motivate	______

	PAGE(S)
☐ Does not explain purpose of module	______
☐ ______________________________	______
Performance Objectives	
☐ Not performance-based	______
☐ Not in logical sequence	______
☐ ______________________________	______
Resources	
☐ Basic resources are appropriate, but one or two should be added or dropped	______
☐ Information sheet needs clarified	______
☐ Poor representation of service areas	______
☐ ______________________________	______
Learning Experiences	
☐ Activity needs to be clarified	______
☐ Activity needs to be added	______
☐ Activities need to be reordered or combined	______
☐ Learning experience contains no activity	______
☐ ______________________________	______
☐ ______________________________	______
Evaluations	
☐ Criteria should be more specific	______
☐ Add, delete or clarify items	______
☐ Answers are too obvious	______
☐ ______________________________	______
☐ ______________________________	______

Recommendation: ____

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☐ MODULE NEEDS MAJOR REVISION

Overall	PAGE(S)
☐ Does not focus on elements	______
☐ Criteria are not met	______
☐ Elements have been left out	______
☐ ______________________________	______
☐ ______________________________	______

Performance Objectives

☐ Enabling objectives require real-life experiences	______
☐ ______________________________	______

Resources

☐ Basic resources are inappropriate	______
☐ Incomplete information	______
☐ Out-of-date materials	______
☐ Plagiarized information sheets	______
☐ Too many pages of reading	______
☐ ______________________________	______

Learning Experiences	PAGE(S)
☐ Learning experience does not deliver on objectives	______
☐ Performance taught is not measurable	______
☐ Activities do not lead to accomplishment of the stated performance objectives	______
☐ ____________________________	______
☐ ____________________________	______
Evaluations	
☐ Do not match learning experience(s)	______
☐ Off-focus in terms of criteria	______
☐ Too loose to measure performance	______
☐ Do not measure achievement of performance objectives	______
☐ ____________________________	______
☐ ____________________________	______

Recommendation: ____

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☐ MODULE NEEDS REWRITTEN

☐ 50% or more of site faculty reviewers will not use module.

Recommendation:

MRFF-1

MODULE REVIEW FORM (FACULTY)

PLEASE REVIEW AND RETURN TO ______________________________ BY __________.

REVIEWER: ____

LOCATION (circle one): Missouri Oregon

MODULE TITLE: ____

Directions: Please review the attached module, writing your specific reactions, suggestions, ideas, etc., directly on the appropriate page of the module.

For general comments and suggestions for improvement, use the space provided below. Comments for each of the general categories listed would be greatly appreciated.

INTRODUCTION (states purpose and overall objective, indicates need for instruction)

PRE-ASSESSMENT/POST-ASSESSMENT (measures attainment of all performance objectives)

OBJECTIVES (are performance-based, describe observable and measurable behavior, reflect competence in the teaching role)

LEARNING EXPERIENCES (logical sequence, contribute to attainment of objectives, alternate experiences provided, provision for feedback)

RESOURCES (supporting materials and references are the best available for the module, resources contribute to attainment of objectives)

FOCUS SHEET

(To be used in module development and review)

The following elements and related criteria are appropriate for this module. The adequacy of the module's objectives is to be judged against them. The module should cover no more or no less. If any are inappropriate or should be added, make note below.

1. Would you use this module if you were teaching the subject? (Answer a or b below.)

☐ a. Yes--then:

Would you give this to an individual student?

☐ Yes

☐ No--why? ______________________________

____

Would you give this to a class as a basis for group instruction?

☐ Yes

☐ No--why? ______________________________

____

Would you use this as a guide to help you plan instruction?

☐ Yes

☐ No--why? ______________________________

____

☐ b. No--why? ______________________________

____

____

APPENDIX C

Sample Module
Preliminary Test Version
(118 modules)

DEMONSTRATE A MANIPULATIVE SKILL

Module C-16
(#110)

Cooperative Curricula Development Component

The Center for Vocational and Technical Education
The Ohio State University
1960 Kenny Road
Columbus, Ohio 43210

March 17, 1972

108

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Critique Form, "Demonstrating a Manipulative Skill". 17

DEMONSTRATE A MANIPULATIVE SKILL

Prerequisites: None

Directions:

1. Check to see that you have satisfactorily completed all prerequisites.
2. Read the Introduction and study the Performance Objectives.
3. Decide whether you wish to attempt the Assessment at this time.
    a. If you do not take the Assessment now, proceed with the module.
    b. If you decide to take the Assessment and successfully complete it, you may choose whether or not to complete the module.
4. Remember that your resource person is available to help you with any problems you encounter while progressing through the module.

PERFORMANCE OBJECTIVES

1. Upon completion of the required reading, demonstrate your comprehension of demonstrating a manipulative skill. Your comprehension will be assessed by the completion of a self-test.
2. Given the assignment of demonstrating a manipulative skill, make all preparations for the demonstration. Your achievement will be assessed by your completion of the "Self Test on Preparing to Demonstrate a Manipulative Skill."
3. Given a simulated situation, present a manipulative skill demonstration. Your competency will be assessed by the "Demonstrating a Manipulative Skill Critique Form."
4. Given the assignment of demonstrating a manipulative skill you will demonstrate a concern for the learner(s). Your competency will be assessed by a resource person using the "Demonstrating a Manipulative Skill Critique Form."
5. In a real school situation, demonstrate a manipulative skill. Your competency will be evaluated by a resource person using the "Demonstrating a Manipulative Skill Critique Form."

INTRODUCTION

The good teacher is always searching for ways of presenting lessons in a stimulating and interesting way. The vocational teacher should be competent in presenting a manipulative skill demonstration as it is an effective technique frequently used to provide information, create interest, or to develop standards of work by showing how a process is done.

The learning experiences in this module are intended to help you develop the competency of demonstrating a manipulative skill. You will be practicing several manipulative skill demonstrations in various situations to give you experience in using the technique.

LEARNING EXPERIENCE 1
(Refer to Objective 1)

During the following learning experiences, you will be involved in organizing and presenting a manipulative skill demonstration. To provide background information for the learning experiences:

VIEW

Pucel, David. "Teaching for Motor-Skill Development," An Introduction to Teaching Vocational Technical Education Through Video Tape and Television.

and

READ

Dale, Edgar. Audio-Visual Methods in Teaching. pp. 138-149.

Optional Readings

Stroop, Christine. "Recipe for a Demonstration." The Balance Sheet, October, 1967. pp. 58+.

Rose, Homer C. The Instructor and His Job. Chapter 7, pp. 110-129.

SELF-EVALUATE

To be sure you have obtained the necessary information to proceed with the learning experiences, check yourself by the self-test provided (p. 10).

LEARNING EXPERIENCE II

(Refer to Objectives 2, 3 and 4)

You are now ready to try demonstrating a manipulative skill. If you need additional help in organizing and presenting the demonstration, refer to the information sheet (p. 13).

PREPARE Select a manipulative skill to demonstrate. Then make all the necessary preparations for the demonstration and complete the "Plan Sheet for Demonstrating a Manipulative Skill," p. 15. Refer to your resource materials if you need help. After you have made all your preparations, take the "Self Test on Preparing to Demonstrate a Manipulative Skill," p. 16. If you have any questions or problems, check with your resource person. If not, you are now ready to present your demonstration.

DEMONSTRATE Present the manipulative skill demonstration to a peer or group of peers. If possible, video tape your demonstration for self-critiquing.

SELF-EVALUATE Use the Critique Form "Demonstrating a Manipulative Skill" p. 17 to assess your demonstration. How did you do? Keep practicing until you are satisfied with your performance.

LEARNING EXPERIENCE III
(Refer to Objectives 2, 3 and 4)

If you experienced any difficulties in demonstrating a manipulative skill maybe it would be helpful to watch someone else give a demonstration and then evaluate it using the Critique Form.

VIEW AND CRITIQUE

Arrange with the resource person for a group session with peers to view and critique the video tape:

"Demonstrating a Manipulative Skill," The Center for Vocational and Technical Education.

After critiquing has been completed the group should discuss their evaluation of the demonstration.

Optional Learning Experience

Arrange to observe a "live" demonstration of a manipulative skill. Evaluate the demonstration with the Critique Form, p. 17.

Now that you have viewed and critiqued a demonstration of a manipulative skill, it is time you again attempt to improve your competency.

DEMONSTRATE

Select a manipulative skill to demonstrate. Organize and present the demonstration in a microteaching session (using students or peers) with video tape feedback.

SELF-EVALUATE

Using the Critique Form, p. 17, self-evaluate the demonstration and ask the students or peers to evaluate you. Practice until you are satisfied with your performance.

LEARNING EXPERIENCE IV
(Refer to Objectives 4 and 5)

Through the previous learning experiences you have practiced giving manipulative skill demonstrations. For this learning experience you are to select, organize and present a manipulative skill demonstration in an actual school setting. Make arrangements for your resource person to view the "live" demonstration or to review a video tape of your presentation.

ASSESSMENT

Your competency will be assessed by your resource person using the Critique Form, "Demonstrate a Manipulative Skill." (p.17).

If you have satisfactorily completed this learning experience, you do not have to take the Assessment.

ASSESSMENT

Report to your resource person to arrange for your demonstration of a manipulative skill. Your competency will be assessed by the resource person using the Critique Form, "Demonstrating a Manipulative Skill," p. 17 .

SELF-TEST FOR LEARNING EXPERIENCE I

Directions: Circle the one best alternative from among the four alternatives presented in each item.

1. Information points take the form of:

   A. notes.

   B. cautions.

   C. topics.

   D. both A and B.

2. Cautions relate to:

   A. discipline.

   B. safety.

   C. differences between machines.

   D. general information.

3. Which of the following is not used by the instructor in presenting a demonstration?

   A. Tools needed

   B. Visual aids needed

   C. List of operating steps

   D. Related information outline

4. If possible, demonstrations should take about:

   A. 10 minutes.

   B. 15 minutes.

   C. 20 minutes.

   D. 30 minutes.

5. Demonstrations are presented:

   A. where convenient.

   B. in surroundings such as those the student will encounter on the job.

C. close to the tool cabinet.

D. in a formal classroom.

6. The initial evaluation of a demonstration is generally made from:

A. the students.

B. the instructor.

C. both A and B.

D. written tests.

7. The students should practice:

A. immediately following the demonstration.

B. after reviewing their related information notes.

C. during the next class period.

D. whenever they have time.

8. Students should be allowed continuous practice of a skill:

A. as they see fit.

B. without instructor interference.

C. only if they are performing it correctly.

D. exactly as it is demonstrated.

9. Summarizing should be done for a manipulative skill demonstration:

A. At the end of the demonstration.

B. As you go along.

C. Both A and B.

D. None of the above.

10. In presenting a demonstration, the teacher should avoid:

A. using time to establish rapport.

B. the COIK fallacy.

C. emphasizing key points.

D. all of the above.

SELF TEST FOR LEARNING EXPERIENCE I

KEY

1. D

2. B

3. D

4. B

5. B

6. C

7. A

8. C

9. A

10. B

INFORMATION SHEET

Demonstrating a Manipulative Skill

A manipulative skill involves changing the form of the material or moving material, e.g. folding a letter to put into an envelope, stacking cans in a grocery store, stripping electrical wire or sewing a button.

A demonstration places emphasis on the doing steps, incorporating only those highly specific points of information essential to the performance of the steps safely and efficiently.

Demonstrating a manipulative skill is a practical and effective teaching strategy for teaching most manipulative skills. Properly used, it helps make the student a keen observer of each step in the demonstration, leads him to the later step-by-step application of the demonstrator's performance--checking his own performance as he proceeds. He is conscious of the function of each step in accomplishing the procedure and aware of the necessary safety precautions.

Suggested procedures for the demonstration:

I. Pre-plan carefully:

   A. Select a manipulative skill to perform.

   B. List goals, key points and safety practices, and teacher activity for each step.

   C. List all equipment, tools, and materials needed for the demonstration.

   D. Collect materials and try-out demonstration.

   E. Re-check steps, key points, and teacher activity for completeness and excess verbiage.

   F. Decide where you would place students to observe the demonstration and how you will position yourself and the materials. Place students so that they see the demonstration over your shoulder whenever possible.

G. Following the revised plan, repeat the demonstration. Before performing each step, tell the observers what you are going to do and why.

H. Plan and prepare visual aids for any step you feel students could not observe clearly.

I. Plan Step I introduction, Steps III and IV which might be the beginning of application, checking, or summarizing by having the students review the steps as you perform the task or as they perform the task.

J. Repeat entire lesson using the introduction, employing the visual aids in the presentation, and trying-out the close of the lesson.

II. During the lesson:

A. State clearly the reason for the demonstration at the beginning telling the students what their role will be during the demonstration and what will be expected of them at the end of the demonstration.

B. Position the students and yourself so they can observe clearly.

C. Perform the demonstration step-by-step telling them what you are going to do in each step and why, giving key points, and then performing the activity for each step.

D. There are a number of ways to summarize. One would be to repeat the demonstration while students tell you each step, what you are to do and why, and giving key points, or if the procedure is simple and safe, guide the students through a step-by-step imitation of the skill.

PLAN SHEET FOR DEMONSTRATING A MANIPULATIVE SKILL

Skill to be Demonstrated:

Materials and/or Equipment Needed:

Procedures:

Steps To Be Followed	Key Points* To Be Emphasized

Reference (if needed):

*Includes safety practices

REFERENCE LIST

Publications

Dale, Edgar. Audio-Visual Methods in Teaching. New York: Holt, Rinehart and Winston, Inc. Revised Edition 1964.

Rose, Homer C. The Instructor and His Job. Second Edition, Chicago: American Technical Society, 1966.

Stroop, Christine. "Recipe for a Demonstration." The Balance Sheet. October 1967. pp. 58+.

Film

Pucel, David. "Teaching for Motor-Skill Development," An Introduction to Teaching Vocational Technical Education Through Video Tape and Television. Minneapolis, Minnesota: University of Minnesota, Dept. of Industrial Education, 1967.

Video Tape

"Demonstrating a Manipulative Skill." Columbus, Ohio. The Center for Vocational and Technical Education, 1970.

SELF TEST ON PREPARING TO DEMONSTRATE A MANIPULATIVE SKILL

Did you:	YES	NO
1. select the manipulative skill to be performed?		
2. outline the steps to be followed indicating key points?		
3. determine all materials and equipment needed?		
4. collect and prepare all materials and equipment?		
5. determine the best position for yourself and the students during the demonstration?		
6. practice the demonstration?		

CRITIQUE FORM
DEMONSTRATING A MANIPULATIVE SKILL

In helping the student learn an occupation, the teacher will be presenting new manipulative skills through a method of teaching known as the demonstration. If the teacher has given a good demonstration and the students have been good observers and listeners, the students should be ready to attempt to perform the manipulative skill safely and step-by-step.

The following items will be used to evaluate the teacher's demonstration. If the teacher did not accomplish the item, put an X in the box below DID NOT ACCOMPLISH. If the teacher did accomplish the item, put an X in the box which best describes HOW WELL the teacher ACCOMPLISHED the item.

Did the teacher in the demonstration:	0 Did Not Accomplish	HOW WELL ACCOMPLISHED 1 Very Poor	2 Poor	3 Average	4 Good	5 Excellent
1. Have all equipment, tools and materials ready for use?	☐	☐	☐	☐	☐	☐
2. Talk to the students and not to the tools or materials?	☐	☐	☐	☐	☐	☐
3. Present each step of the procedure, task, skill or operation in a logical sequence?	☐	☐	☐	☐	☐	☐
4. Briefly state what step was to be performed, how and why it was performed, and then perform it?	☐	☐	☐	☐	☐	☐
5. Position himself and the students so that each step was easily observed.	☐	☐	☐	☐	☐	☐
6. Present only one method of doing the operation or task while stressing the key points so the task could be completed safely and efficiently.	☐	☐	☐	☐	☐	☐
7. Perform the manipulative skill with ease?	☐	☐	☐	☐	☐	☐

Level of Performance: Acceptable performance will be at least an "average" rating for each item. If the teacher received a "very poor" or "poor" on any item, he must continue to work on that item until he has reached the average or better level. (Note: The resource person may change the acceptable level of performance.)

Assessment of Micro-Teaching and Video Recording in Vocational and Technical Education, The Center for Vocational and Technical Education, The Ohio State University, 1900 Kenny Road, Columbus, Ohio.

APPENDIX D

Sample Preliminary Test Data and Data-Collection Forms

MODULE REACTION FORM

We want your honest reactions to the module you have just worked with. You are in the best position to know whether this module does the job that we intended it to do. Your candid responses will help us to make necessary changes in this learning package. Although completion of this form is voluntary, we would appreciate and use any information you can provide:

I. GENERAL INFORMATION

INSTRUCTIONS: Read the brief instructions given for each item and provide the necessary information.

1. Name (not required):________________________ 2. Date________________

3. Module Title:____

4. University or agency administering this module:______________________

5. Current Status: (check one,✓)

____A. Preservice Teacher (now preparing to teach)

____B. Inservice Teacher (currently teaching)

____C. Other (specify)

____

6. Instructional Area: (check one,✓)

____A. Agriculture

____B. Business and Office

____C. Distributive

____D. Home Economics

____E. Industrial Arts

____F. Technical

____G. Trade and Industrial

____H. Other (specify)____________

7. Approximately how much time did you spend working with this module?

_____hours

8. How many learning experiences did you attempt to complete? (specify number) _____

9. How many learning experiences did you complete successfully? (specify number) _____

II. SPECIFIC REACTIONS

INSTRUCTIONS: Please read each of the following statements. Circle the term on the right of each Statement that most nearly represents your opinion of this module. The terms on the right are defined as follows:

SA	A	U	D	SD
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

Your carefully considered responses will definitely be used in our revision of this module!

1. I easily understood each of the module objectives before I began working with the learning experiences . . . . SA A U D SD

   NOTE: If you answered U, D, or SD, please list below, by number, the objectives not easily understood.

2. Each learning experience assisted me in achieving its related objectives . . . . SA A U D SD

   NOTE: If you answered U, D or SD, please list below, by number, the objectives for which experiences were inadequate.

3. I was well aware of my progress (or lack of progress) as I worked through this module . . . . SA A U D SD

4. The evaluations (self-tests, rating sheets, check lists) measured my achievement of the objectives. . . . SA A U D SD

NOTE: If you answered U, D or SD, please list below, by title, the evaluation measures that were deficient.

5. The learning experiences made the best use of my time in achieving module objectives . . . . SA A U D SD

NOTE: If you answered U, D or SD, please indicate below how better use could have been made of your time.

6. I felt that the module instructional materials (readings, etc.) helped me achieve the module objectives. . . . . SA A U D SD

NOTE: If you answered U, D or SD, please indicate below what kind of materials you would have preferred.

7. I feel that the performance objectives included in this module are important to success in vocational teaching . . . . SA A U D SD

III. GENERAL REACTIONS

INSTRUCTIONS: In this section we want your reactions to any aspects of the module that you like or dislike.

1. What did you like best about this module?

   A.

   B.

   C.

   D.

2. What did you like least about this module?

   A.

   B.

   C.

   D.

3. Any additional comments?

MODULE FIELD TEST REPORT

TEACHER EDUCATOR NAME ______________________ DATE: ________

UNIVERSITY ______________________

SPECIALIZATION AREA (circle one): Ag. Bus. & Off. DE Home Ec. T & I Ind. Arts Other

MODULE NAME: ______________________ NUMBER: ________

1. I used this module for (check one):

   ☐ Group Instruction ☐ Individualized Instruction ☐ Other (explain) ________________

2. Considering the objectives to be attained, the time spent by students seemed (check one):

   ☐ Too Short ☐ Reasonable ☐ Too Long

3. Based upon the time I spent administering this module, it seemed (check one):

   ☐ Highly Effective ☐ Effective ☐ Ineffective

4. I would use this module again when preparing vocational teachers (check one and state why you made this choice):

   ☐ Yes ☐ Yes, with revision ☐ No

5. The greatest strengths of this module are:

   A.

   B.

   C.

   D.

6. The greatest weaknesses of this module are:

   A.

   B.

   C.

   D.

7. Please use the back of this sheet for any additional comments.

MODULE REACTION FORM
SUMMARY SHEET

4. University administering module: ____________ Module Title C-16

Mean	3	2	2	2	2	2	2	3	2	2
Mode	2(4)	3(6)	3(5)	2(8)	2(11)	2(10)	2(7)	2(6)	2(10)	2(8)
Range	1-8	1-3	1-3	1-4	2-3	1-5	1-4	1-5	2-4	1-3
Student	7 Hours Worked on Module	8 L.E. Attempted	9 L.E. Successfully Completed	Q1 Objectives Easily Understood	Q2 L.E.'s Assisted Understanding of Objectives	Q3 Student Aware of Module Progress	Q4 Evaluations Measured Achievement	Q5 L.E.'s Worth Time	Q6 Media Helped Module Objective	Q7 Perf Obj Necessary to Voca. Education
( ) 1( )	2	3	3	2	2	2	2	2	2	2
( ) 2( )	3	2	2	2	2	2	2	3	4	2
( ) 3( )	2	3	3	2	2	2	2	2	2	2
( ) 4( )	1	1	1	2	2	2	3	5	2	2
( ) 5( )	2	1	–	2	2	2	2	2	2	1
( ) 6( )	4	2	2	4	2	2	2	1	4	2
( ) 7( )	3	3	3	2	2	2	2	2	2	2
( ) 8( )	2	3	3	2	2	2	2	2	2	2
( ) 9( )	8	3	–	1	2	5	3	5	2	1
( )10( )	5	3	3	4	2	2	4	2	2	3
( )11( )	1.5	2	2	1	3	1	1	4	2	1
( )12( )	3.5	1	1	2	2	2	3	5	2	2
( )13( )										
( )14( )										
( )15( )										
( )16( )										
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( )22( )										
( )23( )										
( )24( )										
( )25( )										
( )26( )										
( )27( )										

Center Evaluation Comments: Mixed comments - Q5 rating disturbing

COMMENTS POSTED FROM MODULE REACTION FORMS

C16--Demonstrate a Manipulative Skill

	hrs.	
Inservice Ind Arts	3	Tried and completed 1. Increased my awareness of students and importance of speaking to them rather than materials or tools. Step by step planning helpful in taking skill down to most basic components.
Inservice Tech	4	Tried and completed all. Liked conciseness of task; being able to concentrate one's effort within a limited scope allows a thorough analysis of the obj. Readings and Objs are not entirely compatible.
Inservice Tech	5	Tried 2, completed 1. It was easy for me--I liked that.
Inservice Tech	5	Tried and completed 3. Objs not clear as to students being involved. Didn't like videotaping with students--time wasted setting up equipment. Taped examples of what is required would be most helpful before we attempt to do taping. Why can't we tape using other teachers instead of students--would save valuable class time.
Inservice Tech	8	Tried 3, completed ? At this time, I have no knowledge if my taped "performance" was satisfactory. Wouldn't a more accurate evaluation of my achievement be to evaluate my students performing the same task? The time spent on this module is school time not my own "free" time. This is not good. Liked viewing demonstrations by others and subsequent discussion. Didn't like making video tape.

Inservice Tech	2	Tried and completed 3. Liked clarity. Too long--reading material was too drawn out.
Inservice Tech	4	Tried and completed 3. In second step, student should tell instructor how student would do it, not how instructor would do it.
Inservice T & I	1	Tried and completed 0. No comments.
Inservice T & I	3	Tried and completed 1. No comments.
Inservice T & I	2	Tried and completed 2. Easily understood breakdown of necessary job performances. Excessive references to read.
Inservice T & I	3½	Tried and completed 1. Liked evaluation checklist. Module had to be done under extremely unfavorable conditions.
Inservice T & I	1½	Tried and completed 2. I knew most LE's before I did them. Some LE's went into more detail than needed. Demonstration comes easy. Didn't like technical set up of visual equipment.
Inservice T & I	3	Tried and completed 3. It opened a way to use this on a limited basis for other unit lessons. Did not completely coincide with my shop level techniques.
Inservice T & I	4	Tried and completed 2. I personally understood more from the conversation than from the written material. Word of mouth and observing others was most beneficial. Didn't find reading material to be very interesting.

PSYCHOMETRIC REFINEMENT DATA (CTB)

MODULE 36: DEMONSTRATE A MANIPULATIVE SKILL

COMMENTS:

The technical writer suggests that the learning experiences in Module 36 be reorganized. It is logical that the learner should observe and critique a demonstration before giving one himself. The suggested reorganization is as follows:

Learning Experience I: Cognitive Material

Learning Experience II. Plan a Demonstration

Learning Experience III: Observe and Critique a Demonstration

Learning Experience IV: Implement the Plan and Give a Demonstration

Learning Experience V: Terminal Objective

MODULE 36: DEMONSTRATE A MANIPULATIVE SKILL

ENABLING OBJECTIVE 1: Upon completion of the required reading, demonstrate your comprehension of demonstrating a manipulative skill. Your comprehension will be assessed by the completion of a self-test.

REVISIONS OF ENABLING OBJECTIVE 1: Demonstrate comprehension of the way to demonstrate a manipulative skill.

OBJECTIVE REFINEMENTS

COMMENTS:

The technical writer is missing the reading selection by David Pucel. Without that selection, the cognitive material for Learning Experience I is incomplete, and the objective refinements will also be incomplete. The technical writer notified OSU of the missing selection that was to be forwarded. After waiting a week without receiving the material, the technical writer decided to proceed with Module 36 since it was one of the two that were requested to be refined as soon as possible.

* pp 1-1 The learner will identify the definition of a manipulative skill.

* pp 1-2 The learner will indicate that demonstrations should be presented in surroundings such as those the student will encounter "on the job."

* pp 1-3 The learner will indicate that demonstrations should not exceed 15 minutes in length if possible.

* pp 1-4 The learner will indicate that safety measures associated with the manipulative skill should be clearly explained to the students, and the learner must be sure to use proper safety measures throughout the demonstration.

* pp 1-5 The learner will indicate that students should practice the manipulative skill immediately following the demonstration.

* pp 1-6 The learner will indicate that the teacher should supervise the students while they are practicing the manipulative skill, and give additional instruction to those who perform it incorrectly.

* pp 1-7 The learner will indicate that the main points of the demonstration should be summarized at the end of the demonstration.

* pp 1-8 The learner will indicate that the students should observe the demonstration from "zero angle" whenever possible.

* = Objective refinements to be measured by a terminal checklist
pp = Objective refinements to be measured by a paper and pencil test

* pp 1-9 The learner will indicate that visual aids should be prepared for any part of the demonstration that students will not be able to see clearly.

* pp 1-10 The learner will indicate that the reason for the demonstration should be clearly stated at the beginning, and students should be told what their role will be during the demonstration and what will be expected of them afterward.

COMMENTS:

Just before starting on Module 36, the technical writer refined Module 19 on safety in the vocational laboratory. It is surprising that Module 19 is not a prerequisite for demonstrating a manipulative skill since they relate in an important way. In fact, Module 19 contains an exercise on safety instruction in connection with demonstration of a manipulative skill. Another problem associated with Module 19 that is noted in comments for that module concerns evaluating the learner on his ability to administer a test. It would seem logical to make the module on testing a prerequisite for Module 19.

The points just made indicate a general problem the technical writer has found throughout the modules. The relationships among different topics are neglected. The learner must synthesize for himself to get the total picture. Attention should be given to coordinating the modules so that they relate to one another and material is not duplicated.

ENABLING OBJECTIVE 2: Given the assignment of demonstrating a manipulative skill, make all preparations for the demonstration. Your achievement will be assessed by your completion of the "Self-Test on Preparing to Demonstrate a Manipulative Skill."

REVISIONS OF ENABLING OBJECTIVE 2: Plan and prepare for a demonstration of a manipulative skill.

OBJECTIVE REFINEMENTS

* 2-11 The learner will select a manipulative skill to perform.

* 2-12 The learner will list the goals of the demonstration and what level of performance will be required to meet the goals.

* 2-13 The learner will list the steps of the demonstration with key points, safety practices, and teacher activity for each step.

* 2-14 The learner will list all equipment, tools, and materials for the demonstration.

* 2-15 The learner will assemble all equipment, tools, and materials for the demonstration.

* 2-16 The learner will determine the best position for himself and the students during the demonstration.

* 2-17 The learner will plan and prepare visual aids for any step the students will not be able to observe clearly.

* 2-18 The learner will practice the demonstration.

ENABLING OBJECTIVE 3: Given a simulated situation, present a manipulative skill demonstration. Your competency will be assessed by the "Demonstrating a Manipulative Skill Critique Form."

REVISIONS OF ENABLING OBJECTIVE 3: In a simulated situation, present a manipulative skill demonstration.

OBJECTIVE REFINEMENTS

* 3-19 The learner will have all equipment, tools, materials, and visual aids ready for use in the demonstration.

* 3-20 The learner will clearly state the reason for the demonstration at the beginning, telling the students what their role will be during the demonstration and what will be expected of them at the end of the demonstration.

* 3-21 The learner will position the students so that they can observe clearly; they should observe from "zero angle" if possible.

* 3-22 The learner will talk to the students and not to the tools and materials.

* 3-23 The learner will present each step of the demonstration in a logical sequence.

* 3-24 The learner will state briefly what step is going to be performed, how and why it will be performed, and then perform it.

* 3-25 The learner will instruct the students in proper safety practices.

* 3-26 The learner will use proper safety practices at all times during the demonstration.

* 3-27 The learner will present only one method of performing the manipulative skill so that students do not become confused.

* 3-28 The learner will summarize at the end of the demonstration.

ENABLING OBJECTIVE 4: Given the assignment of demonstrating a manipulative skill, you will demonstrate a concern for the learner(s). Your competency will be assessed by a resource person using the "Demonstrating a Manipulative Skill Critique Form."

REVISIONS OF ENABLING OBJECTIVE 4: Demonstrate a concern for students when demonstrating a manipulative skill.

COMMENTS:

The objective does not make sense; it is contrived. If a demonstration is performed properly, the student is automatically considered. In fact, the whole demonstration shows a concern for the student. The technical writer strongly suggests that Enabling Objective 4 be deleted. There are no refinements unique to Enabling Objective 4.

TERMINAL OBJECTIVE: In a real school situation, demonstrate a manipulative skill. Your competency will be evaluated by a resource person using the "Demonstrating a Manipulative Skill Critique Form."

REVISIONS OF TERMINAL OBJECTIVE: In a real school situation, plan and prepare for a demonstration of a manipulative skill and then present the demonstration.

TERMINAL OBJECTIVE REFINEMENTS

* 1. The learner will select a manipulative skill to perform.

* 2. The learner will list the goals of the demonstration and the level of performance that will be required to meet the goals.

* 3. The learner will list the steps of the demonstration with key points, safety practices, and teacher activity for each step.

* 4. The learner will list all equipment, tools, and materials needed for the demonstration.

* 5. The learner will assemble all equipment, tools, and materials for the demonstration.

* 6. The learner will determine the best position for himself and the students during the demonstration.

* 7. The learner will plan and prepare visual aids for any step the students will not be able to observe clearly.

* 8. The learner will practice the demonstration.

* 9. The learner will have all equipment, tools, materials, and visual aids ready for use in the demonstration.

* 10. The learner will clearly state the reason for the demonstration at the beginning, telling the students what their role will be during the demonstration and what will be expected of them at the end of the demonstration.

* 11. The learner will position the students so that they can observe clearly; they should observe from "zero angle" if possible.

* 12. The learner will talk to the students and not to the tools and materials.

* 13. The learner will present each step of the demonstration in a logical sequence.

* 14. The learner will state briefly the step that is going to be performed, how and why it will be performed, and then perform it.

* 15. The learner will instruct the students in proper safety procedures.

* 16. The learner will use proper safety practices at all times during the demonstration.

* 17. The learner will present only one method of performing the manipulative skill so that the students do not become confused.

* 18. The learner will summarize at the end of the demonstration.

SUMMARY-PRELIMINARY TEST DATA

1

DESCRIPTIVE DATA								TEACHER EDUCATOR RESPONSES												STUDENT RESPONSES*						
			Type of Use					Nature of Use			Amount of Time Spent			Effectiveness Rating			Would Use Again									
Module Number	Number of Test Sites	Number of Students Testing Module	Pre-Service	In-Service	Other (Grad. Student Etc.)	Number of Vocational Service Areas Represented	Number of Teacher Educators Involved	Group	Individualized	Other	Too Short	Reasonable	Too Long	Highly Effective	Effective	Ineffective	Yes	Yes with Revision	No	Objectives were easily Understood	Learning experiences helped achieve objectives	Was aware of learning progress	Evaluation measured Achievement	Learning Experiences were best use of time	Instructional Materials were helpful	Performance objectives are important
A-1	1	12	7	1	4	2	1			1		1			1			1		1	1	1	1		1	1
2	2	30	4	22	4	7	2	1	2			2			2		1	1		1.8	2.0	2.0	2.1	2.0	1.9	1.9
3	1	14	0	12	2	2	1	1			1				1			1		2	2	2	2	2	2	2
4	1	11	6	5		3	2	2				2			2		1	1		1.8	2.1	2.0	2.1	2.1	1.6	1.6
5	2	12	4	7	1	4	2	1		1		1	1		1		1	1		1.6	2.1	2.7	2.4	2.3	1.8	2.7
6	1	10	0	7	3	4	1	1				1			1		1			2	2	2	2	2	2	1
7	1	11	2	5	4	5	1	1				1			1			1		1.7	2.0	2.2	2.2	2.3	1.9	1.8
8	2	46	4	37	5	8	2			2		2						2		1.7	2.0	1.8	2.1	2.5	2.0	2.1
9	2	30	3	26	1	8	2		1	1		2			2		—	1	1	2	2.3	2	2	2.3	2.3	2
10	2	23	8	11	4	5	2	1	1			2			2			2		1.7	2	1.8	1.7	1.9	2.1	1.0
11	2	55	6	45	4	8	4		2	1		4			3			3		2	2	3	2	2	2	2
12	2	61	51	7	3	5	2		2			1	1		1	1		2		2	2.5	2	2.5	3	2.5	2
13	2	35	10	24	1	6	2	1	2			1	1		2		1	1		2	2	2	2	2	2.6	2
14	2	38	1	34	3	6	2	1	2			1	1		2			2		2	2.3	2.3	2.3	2.3	2	2

*Student's responses are recorded using the mean scores derived from a rating scale of:

1=strongly agree 2=agree 3=undecided 4-disagree 5-strongly disagree

DESCRIPTIVE DATA								TEACHER EDUCATOR RESPONSES												STUDENT RESPONSES*						
			Type of Use					Nature of Use			Amount of Time Spent			Effectiveness Rating			Would Use Again									
Module Number	Number of Test Sites	Number of Students Testing Module	Pre-Service	In-Service	Other (Grad. Student Etc.)	Number of Vocational Service Areas Represented	Number of Teacher Educators Involved	Group	Individualized	Other	Too Short	Reasonable	Too Long	Highly Effective	Effective	Ineffective	Yes	Yes with Revision	No	Objectives were easily Understood	Learning experiences helped achieve objectives	Was aware of learning progress	Evaluation measured Achievement	Learning Experiences were best use of time	Instructional Materials were helpful	Performance objectives are important
A-15	2	22	4	17	1	5	2		1	1			2					1	1	2.7	4.1	2.7	2.7	3.4	1.9	1.9
B-1	1	22	9	15	0	5	1			1		1			1			1		2	3	2	3	3	3	2
2	1	30	9	21	0	6	1	1	1			1		1			1			2	2	2	2	2	2	2
3	3	37	27	20	0	6	2	1	1			1	1		2		1	1		2.4	2.0	2.3	2.4	2.4	2.3	1.7
4	3	53	32	20	1	6	5	1	5			3	1		4	1		5		2.3	2.3	2.3	2	2.6	2.3	2
6	2	30	19	11	0	5	2	1	1			2		1			1	1		2	2	2	2	2	2	2
7	2	21	21	0	0	3	2		2			2			2		1	1		2	2	2	2	2.5	2	2
C-1	2	14	13	0	1	2	2		1	1		1	1		1	1		2		3	2	2	2	2	2	2
2	2	75	1	69	4	8	1		1			1		1				1		1.9	1.9	1.9	2	2	1.8	1.8
3	2	22	10	11	1	5	2	1	1			2			2		1	1		2	2.4	2.1	2.2	2.4	2.3	2.0
4	2	22	11	9	2	5	3	1	2			3			3		2	1		2	2	2	2	2	2	2
5	2	24	13	11	0	3	2	2	1			1	1		1	1		2		2	2	2	2	2	2	2

*Student's responses are recorded using the mean scores derived from a rating scale of:

1=strongly agree **2=agree** **3=undecided** **4-disagree** **5-strongly disagree**

DESCRIPTIVE DATA								TEACHER EDUCATOR RESPONSES												STUDENT RESPONSES*						
Type of Use								Nature of Use			Amount of Time Spent			Effectiveness Rating			Would Use Again									
Module Number	Number of Test Sites	Number of Students Testing Module	Pre-Service	In-Service	Other (Grad. Student Etc.)	Number of Vocational Service Areas Represented	Number of Teacher Educators Involved	Group	Individualized	Other	Too Short	Reasonable	Too Long	Highly Effective	Effective	Ineffective	Yes	Yes with Revision	No	Objectives were easily Understood	Learning experiences helped achieve objectives	Was aware of learning progress	Evaluation measured Achievement	Learning Experiences were best use of time	Instructional Materials were helpful	Performance objectives are important
C-6	2	23	13	3	7	4	2		2			2			2		1	1		1.8	2	2.1	2	2	2	2
7	3	23	5	15	3	7	2		2			2			1		1	1		2	2	2.0	1.8	2	1.6	1.7
8	2	21	10				2	1		1		2		1	1		2			2	2.2	2.2	2.9	2.2	2.3	2
9	2	25	10	15	0	5	2		2			2		1	1		1	1		1.6	2.5	1.6	1.5	2.4	2.1	1.6
10	3	57	31	24	2	5	5	1	4			3	1	1	2	2	2	1	1	2	2	2	2.4	2	2.4	2
11	2	18	11	7	0	4	3		3			2			2	1	2			2	2	2	2	2	3	2
12	3	37	17	19	1	5	3		2	1		3			3		2	1		2	2.3	2	2	2.3	2	2
13	3	38	25	10	3	6	2	1	1			2			2		2			1.9	1.9	1.9	1.9	1.9	2.2	1.9
14	1	17	8	9	0	5	1		1			1			1			1		1.9	1.9	2.1	2.0	2.3	1.8	1.6
15	2	20	5	14	1	3	2		1	1		2			2		1	1		2	2	2	2	2	2	1.5
16	1	23	1	22	0	6	2		2			2			2		1	1		2	2	2	2	3	2	2
17	3	88	19	65	4	7	1			1		1		1				1		2	2	2	2	2	2.2	2
18	3	55	19	35	1	7	2		2			2			2		1	1		2.1	2	2	1.9	2.2	2.1	1.8
19	1	19	1	18	0	7	1	1				1			1			1		2	2	2	2	2	2	2

*Student's responses are recorded using the mean scores derived from a rating scale of:

1=strongly agree 2=agree 3=undecided 4-disagree 5-strongly disagree

DESCRIPTIVE DATA								TEACHER EDUCATOR RESPONSES													STUDENT RESPONSES*							
			Type of Use					Nature of Use			Amount of Time Spent			Effectiveness Rating			Would Use Again										
Module Number	Number of Test Sites	Number of Students Testing Module	Pre-Service	In-Service	Other (Grad. Student Etc.)	Number of Vocational Service Areas Represented	Number of Teacher Educators Involved	Group	Individualized	Other	Too Short	Reasonable	Too Long	Highly Effective	Effective	Ineffective	Yes	Yes with Revision	No	Objectives were easily Understood	Learning experiences helped achieve objectives	Was aware of learning progress	Evaluation measured Achievement	Learning Experiences were best use of time	Instructional Materials were helpful	Performance objectives are important	
C-20	1	11	6	5	0	4	1		1			1		1				1		1.7	2.2	2.3	2.4	2.4	2.3	2	
21	2	22	6	14	2	6	2		1	1		2			1	1	1	1		2	2	2	2	2	2	2	
22	2	26	15	11	0	5	2	1	1			2		1	1		2			2	2	2	2	2	2.5	2	-
23	3	35	20	14	1	6	4		3	1		3	1		2	1	2		2	1.7	2.2	2.1	2.1	2.5	2.7	2.1	
24	3	31	15	16	0	5	4		3	1		3	1		1	3	2	1	1	2	2	2	2	2	2	2	
25	3	27	3	23	1	5	5	1	5		1	4			5		2	3		1.9	1.9	1.8	1.9	2.6	1.9	1.8	
26	2	22	18	4	0	7	2	1	1			2			2		1		1	2	2	2	21	2.1	2.1	1.9	
27																											
28	2	26	1	24	1	4	2		2			2			2		1	1		2.3	2.4	2.4	22	2.5	2.5	2.3	
29	3	33	16	16	1	6	5		5			4	1		4	1	3	1	1	2	2	2	2	2	2	2	
D-1	2	16	7	9	0	4	1		1			1		1			1			2.6	2.6	2.7	2.6	3.2	2.5	2	
2	2	69	13	53	3	6	5		4	1		3	2		2	1		3		2	2	2.2	2.1	3	2	2	
3	2	50	18	32	0	7	4	1	3		1	3			3			4		2.7	2.2	2.1	2.1	2.4	2.1	2.	
4	2	38	7	28	3	6	1	1				1			1			1		2	2	2	2	2	2	2	

*Student's responses are recorded using the mean scores derived from a rating scale of:

1=strongly agree 2=agree 3=undecided 4-disagree 5-strongly disagr

DESCRIPTIVE DATA								TEACHER EDUCATOR RESPONSES												STUDENT RESPONSES*						
Type of Use								Nature of Use			Amount of Time Spent			Effectiveness Rating			Would Use Again									
Module Number	Number of Test Sites	Number of Students Testing Module	Pre-Service	In-Service	Other (Grad. Student Etc.)	Number of Vocational Service Areas Represented	Number of Teacher Educators Involved	Group	Individualized	Other	Too Short	Reasonable	Too Long	Highly Effective	Effective	Ineffective	Yes	Yes with Revision	No	Objectives were easily Understood	Learning experiences helped achieve objectives	Was aware of learning progress	Evaluation measured Achievement	Learning Experiences were best use of time	Instructional Materials were helpful	Performance objectives are important
D-5	3	35	20	14	1	6	4	1	3			4			4		3	1		2	2	2	2	2	2	2
6	2	22	15	7	0	7	2	1	1			2			2		1	1		2.5	2.3	2.5	2.3	2.4	2.3	2
E-1	1	15	2	9	4	3	1		1				1			1			1	2.3	2.4	2.6	2.5	3.3	2.9	2.3
2	1	11	0	9	2	5	1		1			1			1		1			1.8	1.8	2.8	1.9	2.1	1.7	1.6
3	1	15	2	11	2	4	1		1				1			1			1	2.3	2.2	2.5	2.5	2.5	2.3	2.4
4	1	12	10	2	0	2	3	1	2			3			1	2		2		1.9	2	2.2	2.3	2.6	2.7	2.6
5	3	46	17	28	1	5	3	1	2		1	1	1		3		1	2		1.7	1.8	2	2	2.0	1.6	1.6
6	2	21	4	17	0	5	2		2			2		1	1		1	1		1.8	2.1	1.8	1.9	1.8	2.1	1.4
7	3	45	19	20	6	6	3		3			3		1	2		2	1		2.1	2	2.1	2.1	2	2	2
F-1	1	10	9	1	0	2	1	1				1			1		1			1.9	2.3	1.9	2.3	2.6	2.3	2.4

*Student's responses are recorded using the mean scores derived from a rating scale of:

1=strongly agree 2=agree 3=undecided 4-disagree 5-strongly disagree

DESCRIPTIVE DATA								TEACHER EDUCATOR RESPONSES												STUDENT RESPONSES*						
			Type of Use					Nature of Use			Amount of Time Spent			Effectiveness Rating			Would Use Again									
Module Number	Number of Test Sites	Number of Students Testing Module	Pre-Service	In-Service	Other (Grad. Student Etc.)	Number of Vocational Service Areas Represented	Number of Teacher Educators Involved	Group	Individualized	Other	Too Short	Reasonable	Too Long	Highly Effective	Effective	Ineffective	Yes	Yes with Revision	No	Objectives were easily Understood	Learning experiences helped achieve objectives	Was aware of learning progress	Evaluation measured Achievement	Learning Experiences were best use of time	Instructional Materials were helpful	Performance objectives are important
F-2	2	31	11	19	1	6	3	1	1	1		3		1	2		2		1	2	2.1	2.1	2.1	2.1	2.3	2.2
3	2	14	0	14	0	5	2		2			2			2		1		1	1.4	2.1	2	2.2	2.3	2.1	1.8
4	1	12	2	10	0	5	1		1			1			1		1			2.3	2	1.9	2	2	1.9	1.6
5	1	11	0	11	0	3	1		1			1					1			1.6	2.1	2.4	2.2	2.1	1.9	1.4
6	2	47	18	26	3	7	3	2	1	1		3			3		1	2		1.7	2.4	2	2	2.3	2	1.7
G-1	1	10	1	9	0	4	1	1	1				1		1			1		2.3	2.8	2.6	2.0	3.7	2.5	2.0
2	2	20	16	4	0	4	2		2			2			1	1		2		2	1.5	2.2	2.9	2.8	2	1.6
3	2	23	10	9	3	5	2		2			2			2		2			1.7	2	1.9	2	2.1	1.9	1.8
4	1	16	11	2	3	4	1		1			1			1					1.8	2	2	2.3	2.2	2.1	2
5																										
6	2	28	20	1	7	5	2	1	1			2			2			1	1	1.5	1.8	2.0	2	2.8	2.4	2.5
7	3	52	19	31	2	5	4	1	2	1		4		2	2		2	2		1.6	1.8	1.8	1.9	1.9	2.2	2
8	1	9	3	6	0	4	1		1				1			1		1		2.7	2.5	2.5	2.3	3.1	2.5	2.1

*Student's responses are recorded using the mean scores derived from a rating scale of:

1=strongly agree 2=agree 3=undecided 4-disagree 5-strongly disagree

DESCRIPTIVE DATA								TEACHER EDUCATOR RESPONSES												STUDENT RESPONSES*						
	Type of Use							Nature of Use			Amount of Time Spent			Effectiveness Rating			Would Use Again									
Module Number	Number of Test Sites	Number of Students Testing Module	Pre-Service	In-Service	Other (Grad. Student Etc.)	Number of Vocational Service Areas Represented	Number of Teacher Educators Involved	Group	Individualized	Other	Too Short	Reasonable	Too Long	Highly Effective	Effective	Ineffective	Yes	Yes with Revision	No	Objectives were easily Understood	Learning experiences helped achieve objectives	Was aware of learning progress	Evaluation measured Achievement	Learning Experiences were best use of time	Instructional Materials were helpful	Performance objectives are important
G-9																										
10	1	18	1	17	0	4	2		2			2			2			2		2.1	2	1.9	2.3	2.4	2.2	2
H-1	1	14	3	10	1	8	1	1	1				1	1			1			2.1	1.8	2	2	2.3	2.1	2.3
2	1	10	0	9	1	3	1			1	1				1			1		2	2	2	2	3	2	2
3	1	13	9	3	1	5	1	1				1			1		1			1.9	2.2	1.8	2.2	2.9	2.3	2.2
4	2	21	17	2	2	5	2	1	1			2			2		1	1		1.8	1.8	1.9	2	2.1	2	2
5	2	22	9	11	2	5	2		1	1		2			1	1		2		2	2	2	2	3	2	2
6	1	12	2	9	1	6	1		1			1			1			1		1.5	1.5	1.8	1.8	1.8	1.6	1.8
7	1	10	1	7	2	5	1		1				1			1			1	2	2	3	2	3	2	2
8	1	12	1	10	1	6	1		1			1				1		1		1.8	2.3	2.2	2	3	2	2.6
9	1	11	3	7	1	5	1			1		1		1			1			2	2	2	2	2	2	3
10	1	10	1	8	1	5	1			1			1			1			1	2	2	2	2	3	2	3
11	1	10	1	8	1	5	1		1		1					1	1			2	2	2	2	3	2	3

*Student's responses are recorded using the mean scores derived from a rating scale of:

1-strongly agree **2-agree** **3-undecided** **4-disagree** **5-strongly disagree**

DESCRIPTIVE DATA									TEACHER EDUCATOR RESPONSES												STUDENT RESPONSES*						
	Type of Use								Nature of Use		Amount of Time Spent			Effectiveness Rating			Would Use Again									
Module Number	Number of Test Sites	Number of Students Testing Module	Pre-Service	In-Service	Other (Grad. Student Etc.)	Number of Vocational Service Areas Represented	Number of Teacher Educators Involved	Group	Individualized	Other	Too Short	Reasonable	Too Long	Highly Effective	Effective	Ineffective	Yes	Yes with Revision	No	Objectives were easily Understood	Learning experiences helped achieve objectives	Was aware of learning progress	Evaluation measured Achievement	Learning Experiences were best use of time	Instructional Materials were helpful	Performance objectives are important
H-12	1	10	0	9	1	5	1		1			1			1			1		2	2	2	2	2	2	2
13	1	14	7	2	5	5	1	1				1			1		1			2	2.2	2	2	2.2	2.1	2.1
H-15	1	10	1	8	1	5	1		1				1			1			1	2	2	2	2	2	2	2
16	1	10	1	8	1	5	1						1			1			1	2	2	2	3	3	2	2
I-1	1	10	0	4	6	3	1		1			1			1		1			1.8	2.1	1.8	2.4	1.9	2.4	2.4
2	1	10	10	0	0	4	1		1			1						1								
3	2	28	26	2	0	5	2	1	1			2			2		1	1		2	2	2.1	2.1	2.3	1.9	2.
4	1	13	13	0	0	3	1	1				1			1		1			2	2	2	2	2	2	1
5	2	20	10	6	4	6	2	1	1			1			1	1	1		1	1.8	1.8	1.9	1.9	2.3	1.9	1.9
6	1	11	0	11	0	4	1		1			1			1		1			1.7	2	2.2	1.9	1.8	1.6	1.5
7	1	11	0	10	1	5	1		1			1			1			1		1.8	1.8	2.2	2	2.5	1.9	1.
8	1	10	0	8	2	5	1		1			1			1			1		1.8	1.9	2	1.9	2.2	2.2	1.3

*Student's responses are recorded using the mean scores derived from a rating scale of:

1=strongly agree 2=agree 3=undecided 4-disagree 5-strongly disagree

DESCRIPTIVE DATA								TEACHER EDUCATOR RESPONSES												STUDENT RESPONSES*						
			Type of Use					Nature of Use			Amount of Time Spent			Effectiveness Rating			Would Use Again									
Module Number	Number of Test Sites	Number of Students Testing Module	Pre-Service	In-Service	Other (Grad. Student Etc.)	Number of Vocational Service Areas Represented	Number of Teacher Educators Involved	Group	Individualized	Other	Too Short	Reasonable	Too Long	Highly Effective	Effective	Ineffective	Yes	Yes with Revision	No	Objectives were easily Understood	Learning experiences helped achieve objectives	was aware of learning progress	Evaluation measured Achievement	Learning Experiences were best use of time	Instructional Materials were helpful	Performance objectives are important
J-1	1	21	14	5	2	5	2		2			2			2		1	1		2.3	2.6	2.2	2.2	2.2	2.1	1.7
2	1	15	11	0	4	2	1	1				1			1		1			1.8	1.9	1.9	1.9	2	1.8	1.9
3	1	21	0	21	0	6	2		2		1		1		2		1	1		2.3	1.9	2.1	2	2.4	1.9	1.9
4	1	10	3	6	1	3	1		1			1			1		1			2.1	2.0	2.1	1.8	1.9	1.9	2.0
J-7	1	11	4	7	0	4	1		1			1			1			1		1.8	2.2	1.7	2.0	2.2	2.1	1.5
8	1	28	13	15	0	7	1					1			1			1		2.4	2.4	2.0	2.0	2.3	2.3	2.0
J-10	1	17	0	17	0	4	1	1			1				1			1		1.9	1.9	1.9	2	2.3	1.9	1.9
11	1	14	9	2	3	4	1		1			1			1		1			2.0	1.7	2.0	1.6	1.9	1.7	1.7
12	1	22	7	12	3	4	1		1			1			1		1			2.0	2.1	2.1	2.2	2.4	2	2
13	1	17	0	17	0	3	1	1				1			1			1		2	2.2	2	2.1	2.1	2.1	1.6
14	1	10	2	8	0	2	1		1			1			1		1			1.5	2.3	2	2.2	2.9	1.8	2

*Student's responses are recorded using the mean scores derived from a rating scale of:

1=strongly agree 2=agree 3=undecided 4-disagree 5-strongly disagree

DESCRIPTIVE DATA								TEACHER EDUCATOR RESPONSES												STUDENT RESPONSES*						
			Type of Use					Nature of Use			Amount of Time Spent			Effectiveness Rating			Would Use Again									
Module Number	Number of Test Sites	Number of Students Testing Module	Pre-Service	In-Service	Other (Grad. Student Etc.)	Number of Vocational Service Areas Represented	Number of Teacher Educators Involved	Group	Individualized	Other	Too Short	Reasonable	Too Long	Highly Effective	Effective	Ineffective	Yes	Yes with Revision	No	Objectives were easily Understood	Learning experiences helped achieve objectives	Was aware of learning progress	Evaluation measured Achievement	Learning Experiences were best use of time	Instructional Materials were helpful	Performance objectives are important
J-15	1	11	1	10	0	3	1		1		1				1			1		1.7	2.1	2.3	1.8	2.9	2.2	1.6
16	1	17	5	10	2	4	1		1			1			1			1		2.1	2	1.8	2	2.2	2	1.6
17	1	18	0	17	1	7	1		1			1				1			1	1.6	1.9	1.9	2.3	2.7	2	2.6

*Student's responses are recorded using the mean scores derived from a rating scale of:

1=strongly agree 2=agree 3=undecided 4=disagree 5=strongly disagree

APPENDIX E

Revision Procedures and Quality Control Devices

MODULE REVISION PROCESS

(Module Number)

(Module Name)

	IS INPUT AVAILABLE	HAS THE INPUT BEEN FULLY USED
1. Initial Formative Testing:		
a. Module Reaction Forms (TT)		
b. *Taped Interviews with TT		
c. Module Field Test Report (TE)		
d. *Taped Interview with Resource Person		
e. Module Evaluation Form (Coord. of Field Testing)		
2. Objective Refinements (CTB)		
3. Module Annotations (CTB)		
4. *Media Developed Since First Revision		
5. *Information Sheets Written Since First Revision		
6. *Consultant Reviews of Module and Category		
7. *Random Notes Placed in Module Master File		
8. *Recommendations for Information Sheet Development		

*These inputs will be available for selected modules only.

MODULE QUALITY REVIEW CHECKLIST

MODULE TITLE: ______________________________

MODULE NO.: ______________ REVIEWED BY: ______________

Language

1. New terminology is defined in the introduction or information sheets. YES NO
2. The terminology is consistent throughout. YES NO
3. The internal directions are simply and clearly stated, and complete. YES NO
4. The performance objectives are stated in observable terms. YES NO
5. The procedures describe the options available to the learner in completing the module. YES NO
6. The activities clarify what the performance is, how to do it, and why it is necessary. YES NO
7. The language is lively and interesting; not mechanical or pedantic. YES NO
8. The language is geared to the level of an average reader in the target audience. YES NO

Learning Experiences

1. Learning experiences are sequenced logically. YES NO
2. Learning experiences do not overlap. YES NO
3. Learning experiences lead directly to competency in the performance objectives. YES NO
4. All required readings contribute directly to attaining the objectives. YES NO
5. All required activities contribute directly to attaining the objectives. YES NO
6. When an activity may be difficult to implement, alternate ways of completing the activity are provided. YES NO
7. Optional learning activities are provided to give depth, variety, and flexibility to the learning experiences. YES NO
8. A range of activities is provided to accommodate students of different abilities, needs, and interests. YES NO
9. A range of activities is provided to allow for both individual and group work. YES NO
10. Role playing activities include role descriptions and situations to guide anyone playing a role outside his/her own frame of reference. YES NO
11. The learning activities are varied and interesting, with a minimum of repetition from one learning experience to another. YES NO
12. Feedback is provided at the end of every learning experience. YES NO

Information Sheets (Criteria in the "Language" section apply here.)

1. The module is self-contained, if at all possible. YES NO
2. Information sheets contain up-to-date and accurate information. YES NO
3. Information sheets are concrete and tangible; not vague generalities or lists of criteria; they tell "how to do it." YES NO
4. Information sheets are relevant to vocational education, with examples drawn from various service areas of vocational education. YES NO
5. Selected pages of outside resources are used as enrichment and/or reinforcement activities. YES NO
6. Outside resources are not more than 10 years old (unless they are of exceptional value). YES NO
7. Readings (information sheets and outside references) are complete in that they provide the learner with all information needed to complete the module. YES NO
8. Outside references are standard enough that they should be readily available to any module user. YES NO

Self-Checks, Model Answers, Checklists

1. Self-checks are thought provoking and require application of information; not rote responses. YES NO
2. Self-checks comprehensively reflect the information provided in the learning experience. YES NO

3. Self-checks are not obvious; they require an understanding of the knowledge important to achieving the competency. YES NO

4. Model answers are provided to reinforce learning and clarify concepts. YES NO

5. Checklists and assessment forms are stated in observable, performance terms. YES NO

6. Checklists include all the criteria necessary for successful performance. YES NO

7. Checklists actually assess the learner's progress toward the objective. YES NO

8. Checklists are of reasonable length and complexity, with no more than 25-30 items. YES NO

9. Alternatives to peer evaluation are provided for those learners who cannot arrange to work with peers. YES NO

10. Each feedback device includes a stated level of performance. YES NO

11. Evaluations provide for recycling if the level of performance is not met. YES NO

Media

1. The media is applicable to all vocational service areas. YES NO

2. The media illustrates, clarifies, reinforces, or extends the concepts introduced in the module; it doesn't simply repeat them. YES NO

3. The media is realistec, i.e., the teacher, students, and real school setting are believable. YES NO

4. The length of the media is reasonable (10 to 20 minutes). YES NO

5. The media is interesting visually/aurally. YES NO

6. The media is clear visually/aurally. YES NO

7. If the media includes an exemplary instructor, the instructor:
   a. relates well with students. YES NO
   b. uses student feedback. YES NO
   c. uses media or teaching aids where appropriate. YES NO
   d. presents information geared to the needs of the students. YES NO
   e. teaches on the basis of up-to-date learning theory. YES NO

8. The media is free from racial and sex bias. YES NO

9. The media is lively and action-oriented. YES NO

10. The information is presented in a logical sequence. YES NO

Overall

1. The module delivers on the objectives. YES NO

2. The module meets format specifications. YES NO

3. The module is internally consistent (objectives, activities, feedback devices, etc. do not contradict each other, directly or indirectly) YES NO

4. No learning experience other than the final learning experience requires performance in an actual school situation. YES NO

5. Opportunity is provided for practicing any performance which must be executed in the real world. YES NO

6. The final learning experience requires performance in an actual school situation. YES NO

7. The learning experiences are realistic; i.e., they do not require an unreasonable amount of prior knowledge or of time on the part of the learner. YES NO

8. Implementation of the module is feasible and practical; i.e., it does not require an unreasonable amount of the resource person's time. YES NO

9. Learning activities, information sheets, case studies, resources, etc. provide equitable representation of the various service areas in vocational education. YES NO

10. An introductory statement is provided which motivates the student by explaining why the competency is needed, not simply what the competency consists of. YES NO

11. An introductory statement is provided which places the module in a frame of reference with other modules in the category, and with the broad theory of vocational education. YES NO

12. All necessary or desirable prerequisite competencies are listed. YES NO

10/15/75

Module No. ____________

Revisor ______________________________

Team Members ______________________ ______________________________

Date ______________

MODULE ROUTING FORM

Activity	Date	Signature
1. Approved by revision team (goes to KQ)		
2. Format review completed (KQ) (goes to Bob)		
3. Content review completed (goes to Susie)		
4. Titles ordered (Susie)		
5. Estimate of performance developed		
6. Illustration(s) ordered		
7. Final draft typed (Susie, etc.) (goes to KQ)		
8. Final draft critiqued (KQ)		
9. Corrections made (Susie, etc.)		
10. Corrections checked (KQ) (goes to Lorie)		
11. Paste-up symbols and titles (Lorie) (goes to Joan)		
12. Paste-up checked (Joan)		
13. Paste-up corrections made (goes to Bob)		
14. Final review		

Module Title: ______________________________ Module No. ______

MODULE FINAL REVIEW CHECKLIST

Instructions: Please check yes if the work has been done correctly. When the work has not been done, place the page number in the no column and make a check mark in blue pencil beside what needs to be done.

	YES	NO
I. General Factors to Check:		
1. Page numbers are sequential starting with introduction (blank pages are not numbered but are counted in the sequence).		
2. Page numbers in overviews and activity statement are accurate (information sheet also sometimes has them).		
3. Margins have been adhered to.		
4. Corrections are neat and accurate.		
5. Dots (bullets) are used where appropriate.		
6. Checklists have correct headings and columns.		
7. All titles are centered and parallel with typing.		
8. All symbols are properly spaced.		
9. Activity symbols are proper sequenced.		
10. Activity symbols have a like symbol in the learning experience.		
11. All consumable pages, checklists, etc., start on right-hand page.		
II. Specific Page and Section Checkpoints:		
1. Title Page		
a. module title		
b. module number		
c. performance element no.(s)		
2. Prerequisite Page		
a. prerequisite heading		
b. dots (bullets) in front of each module title		

Module Final Review Checklist (cont.)

	YES	NO
3. Contents Page		
a. has heading		
b. single line under heading		
c. double space between and single space within headings		
d. page numbers check with text		
4. Introduction		
a. has heading		
b. two lines under heading		
c. is page no. 1		
5. Module Structure and Use		
a. section title in place		
b. single line under heading		
c. five sub-titles in place		
d. page no.s in terminal objective		
e. learning experience no. (italics) in place after terminal and enabling objectives		
f. procedure description of the location of objectives is accurate		
g. dots (bullets) appear in front of each procedure sub-paragraph		
h. learning experience no.s (italics) are in place for all required and optional resources		
i. dots appear in front of each resource and optional resource item		
6. Overview Pages (Check each one)		
a. learning experience title in place		
b. overview title in place		

Module Final Review Checklist (cont.)

	YES	NO
c. symbols are properly spaced		
d. symbols are properly sequenced		
e. page numbers are correct		
f. activity hand is in place		
g. all start on a right-hand page		
h. a solid black line is drawn around the overview. When the overview is two pages, the bottom line on the first page is - - - with continued (italic) underneath. The top line of the second page also has - - - line with OVERVIEW (caps) continued (both in italic) above the line		
7. Learning Experience (Activity and Feedback) Pages a. activity symbols are identical with those on overview		
b. titles for information sheet, self-check, etc., are in place		
c. page number citations are correct		
d. feedback hand is at bottom of last activity page		
e. end of experience symbol is on last page		
f. there are the same number of checklists as stated in the activity		
g. illustration is there if one is being used		
8. Final Experience a. symbols are in place		
b. page number citations are correct		
c. feedback symbol is at bottom of first page		
d. end of module symbol appears on bottom of last page		

Module Review Completed by: ______________________________
(signature)

Date Review Completed: ______________________________

Module Final Review Checklist (cont.)

Corrections Made By: ______________________________
(signature)

Date Corrections Made: ______________

Final Approval by: ______________________________
(signature)

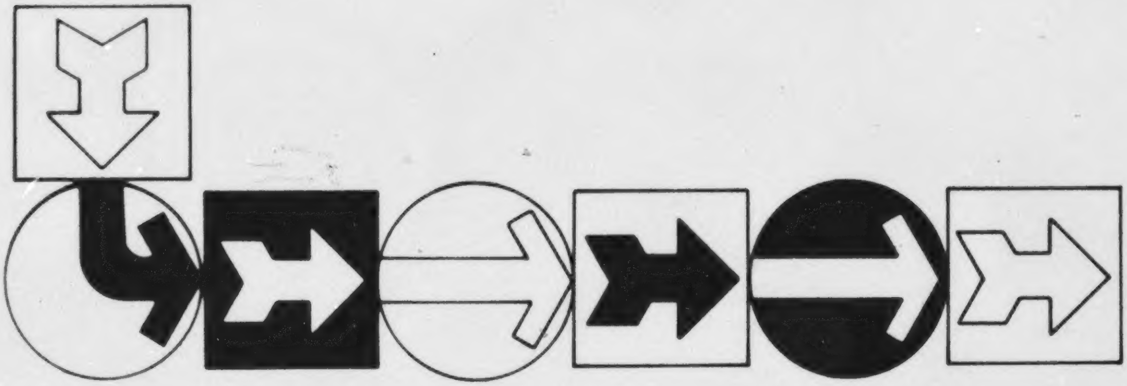
Date Approved: ____________________

APPENDIX F

Sample Module
Advanced Test Version
(100 modules)

DEMONSTRATE A MANIPULATIVE SKILL

MODULE C–16



Professional Vocational Teacher Education Module

THE CENTER FOR VOCATIONAL EDUCATION
The Ohio State University · 1960 Kenny Road · Columbus, Ohio 43210

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DEMONSTRATE A MANIPULATIVE SKILL

MODULE C–16

PERFORMANCE ELEMENT NO. 110

Performance-Based Curricula Program
The Center for Vocational Education
The Ohio State University
1960 Kenny Road
Columbus, Ohio 43210

September, 1974

Prerequisites To complete this module, you will need competency in determining needs and interests of students, in planning a unit of instruction and in developing a lesson plan. These competencies may be acquired using the following sequence of modules:

- Determine Needs and Interests of Students, Module B-1
- Plan a Unit of Instruction, Module B-3
- Write a Lesson Plan, Module B-4

If you wish to use these modules to acquire the prerequisite competencies, you need to complete all learning experiences in which you are not already competent. However, you need not complete the final (real world) experiences.

If you have acquired the prerequisite competencies in some manner other than by completing the above modules, check with your resource person to see if you need to complete any part of the prerequisite modules.

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INTRODUCTION

Good teachers are constantly searching for ways to present their lessons in a stimulating and interesting way. The procedures and methods which are most appropriate will depend on the nature of the subject matter being taught and the different ways in which people learn.

In vocational education, a major part of the teaching responsibility involves manipulative operations--changing the form of something or moving something. Since this is a dominant part of vocational programs, all vocational teachers should be competent in effective ways of teaching manipulative operations.

The demonstration is a basic and popular method of presenting a manipulative skill. It may be defined as a visualized explanation of an important fact, idea or process. In broader terms, it is considered an audiovisual explanation. Students observing a teacher effectively demonstrating a manipulative skill can see each step of the process performed and hear explanations of key points which are essential to successfully performing the skill.

The learning experiences in this module are designed to help you develop competency in demonstrating a manipulative skill.

Module Structure and Use

Organization This module contains an introduction and five sequential learning experiences. Overviews, which precede each learning experience except the final one, provide at a glance brief descriptions of what each learning experience entails.

Two types of objectives form the basis of the learning experiences: a terminal objective and enabling objectives. The enabling objectives are designed to help you achieve the terminal objective. Each learning experience has activities to help you accomplish the objective, and by use of the feedback devices provided, you should be able to determine if you have reached each objective.

The first learning experience is designed to provide you with the needed background information. The second, third and fourth learning experiences are designed to give you an opportunity to apply that information in practice situations. The final learning experience is designed to allow you to demonstrate a manipulative skill in a real school setting when you are an intern, a student teacher, or an in-service teacher.

Objectives This module includes five objectives:

Terminal Objective: In an actual school situation, demonstrate a manipulative skill. Your performance will be assessed by your resource person, using the "Teacher Performance Assessment Form," pp. 49-53 *(Learning Experience V)*.

Enabling Objectives:

1. After completing the required reading, demonstrate knowledge of the steps and procedures involved in demonstrating a manipulative skill *(Learning Experience I)*.
2. Given a videotape of a teacher demonstrating a manipulative skill, critique the performance of that teacher *(Learning Experience II)*.
3. Given the assignment of demonstrating a manipulative skill, develop a detailed plan for demonstrating that skill *(Learning Experience III)*.

4. In a simulated classroom or laboratory situation, demonstrate a manipulative skill *(Learning Experience IV)*.

Procedure After reading the "Introduction," p. 1, and the objectives listed above and on the previous page, you should be able to determine how much of this module you will need to complete in order to be competent in demonstrating a manipulative skill.

- If you already have the necessary background knowledge required for proficiency in giving a demonstration of a manipulative skill, you may not need to complete Learning Experience I.

- If you have had practice with planning, preparing and performing a manipulative skill demonstration, you may not need to complete Learning Experiences II, III and IV.

- Instead, with the approval of your resource person, you may choose to proceed directly to Learning Experience V and attempt to meet the terminal objective (demonstrate a manipulative skill) at a time when you have access to an actual school situation.

- You may wish to skim the overviews for Learning Experiences I-IV, and to skim the final learning experience. These pages will provide you with more specific information for deciding which experiences you need to complete.

Resources Listed below are the outside resources which supplement those contained within the module. Check with your resource person to determine the availability and the location of the resources.

REQUIRED RESOURCES

Equipment

- **Videotape equipment** for viewing *(Learning Experience II)*.

Materials

- Videotape: "Demonstrating a Manipulative Skill," Columbus: The Center for Vocational Education, The Ohio State University *(Learning Experience II)*.

Peers

- You will need one to five (1-5) peers to critique your demonstration of a manipulative skill in the simulated situation. A "peer" can be a fellow student, a fellow teacher, a roommate, or a friend. In this module, the peers you select should be persons in your own occupational specialty *(Learning Experience IV)*.

Resource Person

- If you are unable to use peers as required, you must contact your resource person to critique your demonstration of a manipulative skill in the simulated situation *(Learning Experience IV)*.

- Your resource person must be contacted to assess your performance in demonstrating a manipulative skill in an actual school situation *(Learning Experience V)*.

OPTIONAL RESOURCES

Equipment

- Videotape equipment for taping: You may choose to videotape your demonstration of a manipulative skill in the simulated situation (1)if you wish to self-evaluate, or (2) if you wish to cooperate with other peers taking the module in evaluating each other *(Learning Experience IV)*.

Peers

- If other peers are taking this module at the same time as you are, you may wish to arrange with them to view and critique each other's taped demonstrations *(Learning Experience IV)*.

References

- Consult with your resource person for additional references in your occupational specialty.
- Rose, Homer C. The Instructor and His Job. Second Edition. Chicago: American Technical Society, 1966 *(Learning Experience I)*.

Resource Person

- Your resource person may be contacted if you have any difficulty with directions, or in assessing your progress at any time.
- If you wish to observe an actual manipulative skill demonstration, you may ask your resource person to suggest professors or teachers that you could contact *(Learning Experience II)*.

Resource Person and/or Peers

- If you wish to discuss the information contained in the reading(s) or to explore the topic further through discussion, you can set up a seminar-type meeting with peers and/or your resource person *(Learning Experience I)*.

Terminology Actual School Situation...refers to a situation in which you are actually teaching vocational students in a real school. An intern, a student teacher, or an in-service teacher would be functioning in an actual school situation. If you do not have access to an actual school situation when you are taking the module, you can complete the module up to the final learning experience. You would then do the final learning experience later, i.e., when you have access to an actual school situation.

Occupational Specialty or Service Area...refers to your major vocational field: Agricultural Education, Business and Office Education, Distributive Education, Health Occupations Education, Home Economics Education, or Trade and Industrial Education.

Optional Activity or Optional Feedback...refers to an item which is not required, but which is designed to supplement and enrich the required items in a learning experience.

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Resource Person...refers to the person in charge of your educational program; the professor or instructor who is guiding you in taking this module.

Student...refers to the person whom you will be teaching (high school or post high school vocational student).

You or Teacher...refers to the person who is taking the module.

Learning Experience I

OVERVIEW

Enabling Objective

After completing the required reading, demonstrate knowledge of the steps and procedures involved in demonstrating a manipulative skill.

Activity

You will be reading the "Information Sheet for Demonstrating a Manipulative Skill," pp. 9-18.

Optional Activity

You may wish to read the supplementary reference, Rose, The Instructor and His Job, pp. 110-129.

Optional Activity

You may wish to meet with your resource person and/or peers to discuss the reading(s), or to generate a list of manipulative skills in your service area.

Activity

You will be demonstrating knowledge of the steps and procedures involved in demonstrating a manipulative skill by completing the "Self-Check," pp. 19-21.

Feedback

You will be evaluating your competency by comparing your completed "Self-Check" with the "Model Answers," pp. 23-24.

Activity

Activity

For information defining the demonstration method of teaching and explaining the steps and procedures involved in this method, read the following information sheet:

INFORMATION SHEET FOR DEMONSTRATING A MANIPULATIVE SKILL

The basic method for introducing new skills to the learner is through a demonstration. Wiring an electrical outlet, making a buttonhole, planting a tree, or developing a customer statement using a billing machine--each involves manipulative skills that can be presented through demonstration. Showing students how new skills should be performed seems so direct and simple to the inexperienced teacher that it would seem hard to go wrong. Many teachers fail to present new skills effectively, however, because they neglect one or more of a few simple procedures that are essential to good demonstrations.

It is generally agreed that "Demonstration Teaching" should consist of the following four basic steps:

I. Preparation (of the student--motivating students to watch and listen)

II. Presentation (of the skills--showing students the succession of steps and exploring key points that make the operation a success)

III. Application (providing each student opportunity to try out and practice the skill under supervision)

IV. Testing or Follow-up (evaluation of the student's performance of the skill)

The sample lesson plan format on pp. 10-11, which is designed for use in planning for teaching a manipulative skill, provides

MODEL LESSON PLAN: MANIPULATIVE SKILLS

Unit_______
Lesson______

JOB (or operation):

AIM(or purpose):

TOOLS AND EQUIPMENT:

MATERIALS:

TEACHING AIDS:

REFERENCES:

I. PREPARATION (of the student)

II. PRESENTATION (of the skills):

Operations or Steps	Key Points (things to remember to do or say)

(CONTINUED)

(Additional blank sheets can be ruled into two columns for notes for presentation step.)

Operations or Steps	Key Points (things to remember to do or say)

III. APPLICATION (practice by student under close supervision)

IV. TEST (performance of skill to acceptable standards)

Suggested Reading for Student:

for planning these four basic steps. You may have used a similar format in the prerequisite module, "Write a Lesson Plan," or your resource person may provide a similar planning format for you to use.

Although the "Application" and "Testing or Follow-up" steps are essential parts of teaching a manipulative skill, the major focus of the remainder of this information sheet will be upon what the teacher does in planning for the demonstration, preparing the students (step I) and presenting the skill (step II). Further information on what should take place after the teacher demonstrates the skill, [the "Application" (step III) and "Testing or Follow-up" (step IV)] may be obtained through study of the modules "Direct Student Laboratory Experience" and "Assess Student Psychomotor Performance."

Preparing for the Demonstration

Before conducting any demonstration, the teacher should examine the student performance objectives to be sure that the lesson to be presented is indeed appropriate for, and lends itself to, the demonstration method--i.e., there is a manipulative skill to be learned. The teacher should have clearly in mind what is to be demonstrated. If there are many technical terms (or other cognitive information) which students need to know in order to understand the demonstration, then an informational type lesson should be planned to precede the demonstration. When this is done, students will be better prepared to follow the teacher's directions and explanations during the demonstration. Often, manipulative skills which require a great number of steps to complete can be broken down into segments of two or more demonstrations. Normally, a demonstration should not last for more than 15-20 minutes, since students are called upon for a rather high degree of attention and concentration during a demonstration.

The teacher should have a lesson plan which identifies in logical order each step necessary in performing the specific skill to be demonstrated. The lesson plan should also identify, in conjunction with each step, key points or specific techniques essential to successfully performing that step. Safety practices specific to the operation should also be listed under key points. The sample lesson plan format on pp. 10-11 (Presentation section) makes provision for listing "Steps" in one column and "Key Points" in another column. Teachers often reproduce this section of their lesson plan as a "Job Sheet" or "Operation Sheet" which they provide to each student during or following the demonstration for students' reference during the application phase of the lesson.

The next step is to have all tools, materials, supplies and visuals at hand, in good condition and properly organized before you start the demonstration. A sure way to destroy the effectiveness of an otherwise good demonstration is to have to interrupt the demonstration at a critical point to hunt up a needed item. The sample lesson plan format on p. 10 also provides for listing equipment, tools, materials and teaching aids needed for the demonstration.

Further, you need to prepare the physical setting in which you will conduct the demonstration so that each student will be able to see every movement and hear every direction or explanation clearly. The conditions under which you perform the demonstration should be as close to reality as possible. However, if the student is to learn from observing you, then both students and equipment will need to be arranged so this can happen. If direction of movement is of special importance, students should be positioned to view the demonstration over your shoulder or from approximately the same angle as they would view their own performance of the operation.

It is important also that students' physical comfort be considered, as attention may fall off rapidly if students are forced into an uncomfortable position in order to observe. Poor lighting, poor ventilation, or a noisy location in the laboratory can also adversely affect students' attention.

Before presenting your demonstration to your students, it is often advisable to practice your demonstration step by step following the outline you will use. This is especially important when you have not given the particular demonstration for some period of time. This procedure should (1) help build your own confidence in being able to present the demonstration skillfully, (2) serve as a check to see that you have not omitted essential steps, and (3) serve as a check to see that you have all equipment and materials properly prepared.

When it is necessary to demonstrate steps involving very small parts or intricate processes, it is advisable to develop visuals showing enlargements of the parts, or models which can be passed among the students to see needed details at critical points in the demonstration.

At times, processes or operations being demonstrated require that considerable time be spent completing one step of the process. If several minutes or hours of doing the same thing are required, or a lapse of time is necessary such as might be the case when a recipe calls for refrigerating a mix, the teacher should complete this time-consuming step ahead of time. Then, during the demonstration, the teacher can bring out and substitute the previously prepared item when needed in order to be able to complete the demonstration in a reasonable amount of time.

Motivation

You need to introduce the demonstration with well-chosen questions to lead the students into discussion of the job to be done. You should have outlined in your lesson plan under "Preparation" how you intend to gain students' interest. Unless you are able to explain what you are going to do, and connect it with what the students already know or have done, students may miss several essential points. They may be groping for what the teacher is doing rather than focusing on how it is being done.

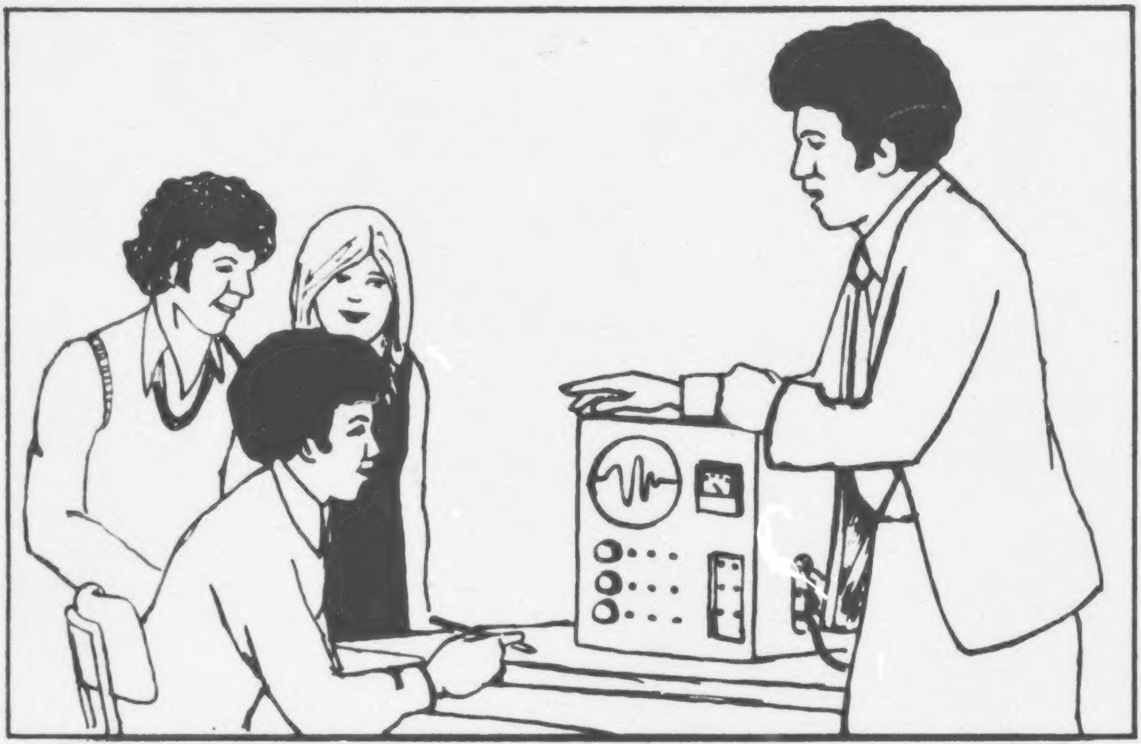
Through questioning and discussion you can determine if the students know what is to be done and find out what they know about it. Show enthusiasm in questioning, citing applications and showing the importance of being able to do the job well.

Presentation

The following are important procedures to follow in presenting the demonstration for which you have prepared:

- Show and explain completely the procedure by going through the process step by step.
- Perform the demonstration slowly enough so that students do not miss key points, taking up one step at a time. Emphasize trade secrets for doing a good job.
- Be sure to explain new terms. Talk to your students, not to your equipment.
- Emphasize safe practices as you proceed.
- Be definite by showing the best procedure to do the job--the one that is commonly used in the field. Don't confuse students by showing several procedures.
- Question your students as the demonstration proceeds to insure their understanding of each step and to get them to think through the job.
- Set up standards of workmanship by doing a good thorough job that will challenge your students' ability.
- Encourage your students by showing how easy difficult manipulative jobs can be when done properly.
- **Summarize the steps and key points. You may find it necessary to repeat the demonstration for some students.**

One way of involving students in summarization and reinforcement following the teacher's demonstration is to have a student repeat the demonstration. The following is one of several



The demonstration method of teaching is excellent for introducing new occupational skills.

variations in demonstration procedure that may be utilized which involves student participation in the demonstration:

- First, the teacher performs the operation and tells what is occurring.
- Then, a student performs the operation while the teacher tells what is occurring.
- Then, another student performs the operation and tells what is occurring.

When students are involved in the demonstration as outlined, opportunity for reinforcement of learning is provided and the teacher is provided with immediate feedback regarding the effectiveness of the demonstration.

When the instructor is assured that the students understand the process and are ready to practice the skill demonstrated, students should be directed to the "Application" phase of the lesson in which provision should be made for them to practice the skills in the laboratory, on the job or at home.

Optional Activity

For further information on the demonstration method of teaching, you may read Rose, The Instructor and His Job, pp. 110-129.

Optional Activity

You may wish to arrange to meet with your resource person and/or peers who are also taking this module. In this meeting, you could (1) discuss manipulative skill demonstrations from personal experiences, (2) generate a list of the manipulative skills typically demonstrated in your service area, (3) brainstorm for new demonstration ideas.

Activity

The following statements and questions check your comprehension of the material in the "Information Sheet for Demonstrating a Manipulative Skill," pp. 9-18. Each of the ten items requires a short essay-type response. Please explain fully, but briefly, and make sure you respond to all parts of each item.

SELF-CHECK

1. Explain why the demonstration method of teaching is especially appropriate for teaching manipulative skills.

2. If a teacher is highly experienced in a particular manipulative skill, why should that teacher prepare a lesson plan before giving a demonstration?

3. Describe what physical preparations a teacher should make prior to a demonstration, and why this is important.

4. Why should a teacher practice the demonstration prior to presenting it to the class?

5. When a step of the operation (or the parts involved) is so small or detailed that visibility is impossible, how can a teacher remedy this problem?

6. Is showing students several ways of performing the skill a good idea? Why or why not?

7. How can a teacher be sure that the students understand what is being done during the demonstration and why it is being done?

8. When there is a considerable amount of technical information or many new terms to be mastered in order for the students to understand and follow a demonstration, how should the teacher handle this?

9. How can the teacher help to assure that the students will be able to relate this manipulative skill to how it functions in the real world of work?

10. What types of summarization activities can a teacher use to conclude a demonstration effectively?

Feedback

Feedback

Compare your written responses on the "Self-Check" with the model answers given below. Your responses need not exactly duplicate the model answers; however, you should have covered the same major points.

MODEL ANSWERS

1. When a manipulative skill is to be learned by students, they need to learn a number of things all at once: (1) a succession of steps, (2) the order in which to perform those steps, (3) the techniques involved in performing those steps, and (4) the safety precautions involved. The most straightforward way to learn all that is to see it actually performed and to hear it explained simultaneously, i.e., to see it demonstrated.

2. Being able to perform a skill yourself does not guarantee that you can explain how to perform that skill. For persons who are especially skilled at an operation, that operation has become almost automatic. When you first learned division and multiplication in grammar school, you had to go through careful consecutive steps on paper to get your answers. As time went on a lot of those steps were condensed or done in your head. It became easy and self-evident. To teach the skill, it is necessary to break that skill back down into those steps. To be sure (1) that the operation is presented in logical steps the students can follow, (2) that all steps are presented, (3) that key points are highlighted, (4) that the safety practices central to the successful operation of the operation are not overlooked, and (5) that you will have all tools, supplies, equipment and visuals necessary to present that demonstration, you need to prepare a lesson plan.

3. You need to assemble all tools, supplies, equipment and materials so that (1) the manipulative skill can be fully and properly performed, and (2) you can perform the skill without interrupting the presentation to obtain a needed item. You also need to arrange the setting so that all students can both see and hear the demonstration clearly.

4. Practice is an excellent technique for (1) making you more confident in your ability to present the demonstration, (2) giving a little polish to the demonstration, (3) catching errors or potential problem areas, and (4) checking to see if all steps have been included and all necessary equipment and materials are available and in good condition.

5. To deal with tiny or detailed steps or parts, you need to prepare some alternative method for presenting that portion of the demonstration. A bigger-than-life-sized model or some sort of visual showing enlargements of the parts can be used to allow students to see that portion clearly.

6. It is not a good idea to present more than one way to perform the manipulative skill. Mastering all the steps in that one method is possible; trying to master two or more methods for performing a brand new skill can be confusing.

7. During the demonstration, you can get feedback as to whether or not the students are following and understanding the procedure by asking key questions. These questions should be prepared ahead of time to assure that you will get feedback at key points throughout the demonstration.

8. When there is a lot of new information or there are a lot of new terms, you should present an informational lesson prior to the demonstration lesson. The students need time to absorb the information before they can be expected to follow the demonstration easily.

9. There are several ways to relate the skill to how it functions in the real world of work. First, in introducing the demonstration lesson, you can verbally explain why the skill is important to the students' career goals. Second, you can help to assure that the skill is transferrable to the real world by performing the demonstration under conditions which closely resemble reality, and by using the procedure most commonly used on-the-job. Finally, you could position the students so that they are viewing the job from the same position in which they will be doing it themselves.

10. To summarize, the teacher can merely restate the steps and key points, or run through the demonstration again briefly. However, it is preferable to involve students in the summarization. This can be done by having students restate the steps and key points, or by asking key questions. One good method for summarizing and involving students and reinforcing the learning and getting feedback all at the same time is to follow your demonstration by (1) having a student perform the operation while the teacher explains the procedure, and then (2) having another student perform and explain the operation unaided, but under teacher supervision.

LEVEL OF PERFORMANCE: Your completed "Self-Check" should have covered the same major points as the model answers. If you missed some points or have questions about any additional points you made, review the material in the "Information Sheet for Demonstrating a Manipulative Skill," pp. 9-18, or check with your resource person if necessary.

Learning Experience II

OVERVIEW

Enabling Objective Given a videotape of a teacher demonstrating a manipulative skill, critique the performance of that teacher.

Activity You will be viewing the first part of the videotape, "Demonstrating a Manipulative Skill."

Activity You will be critiquing the first part of the videotape, "Demonstrating a Manipulative Skill," using the "Video Teacher Performance Checklist," p. 29.

Feedback You will be evaluating your competency in critiquing the videotaped demonstration by comparing your ratings of the videotaped demonstration with the model answers provided in the second part of the videotape.

Optional Activity You may wish to observe a professor and/or inservice teacher performing an actual manipulative skill demonstration.

Activity ☞

Activity

The videotape you will be viewing will give you a chance to use your knowledge of how to demonstrate a manipulative skill. Secure the necessary equipment and view the videotape, "Demonstrating a Manipulative Skill." The tape is in two parts: (1) a presentation showing a teacher demonstrating a manipulative skill, and (2) an evaluation of the demonstration. At this time, view only the first part.

The narrator on the videotape will explain what to look for in the demonstration. When the demonstration on the first part of the tape ends, stop the machine, and move immediately on to the next activity.

Activity

Use the following checklist to guide you in evaluating the manipulative skill demonstration which you just viewed on the videotape. (You may wish to view the first part of the videotape again before attempting to complete the checklist. If so, be sure to STOP at the end of the first part of the videotape.) Rate the video teacher's level of performance on each of the following performance components involved in demonstrating a manipulative skill. Indicate the level of the teacher's accomplishment by placing an X in the appropriate column under the LEVEL OF PERFORMANCE heading.

VIDEO TEACHER PERFORMANCE CHECKLIST

	LEVEL OF PERFORMANCE					
	N/A	NONE	POOR	FAIR	GOOD	EXCELLENT
The teacher:						
1. had all equipment, materials and tools ready for use in the demonstration....................						
2. talked to the students, and not to the materials.................						
3. presented each step logically ...						
4. stated, then explained, then performed each step..............						
5. made sure that all students could see.......................						
6. used only one method of performing the skill, stressing key points necessary for safety and efficiency......................						
7. performed each step easily and thoroughly......................						

Feedback

Feedback

To determine your competency in evaluating the manipulative skill demonstration, view the second part of the videotape. In this second part, the narrator will provide you with model answers with which to compare the responses you made on the checklist.

LEVEL OF PERFORMANCE: Your completed checklist should have compared closely with the narrator's model answers. If any of your checklist responses were not consistent with the model answers, and the narrator's explanation of his response does not satisfy you, check with your resource person for clarification.

Optional Activity

For additional examples of teachers demonstrating manipulative skills, you may wish to arrange to observe a professor and/or in-service teacher who is performing such a demonstration. You may wish to discuss with them how they plan and what specific guidelines they use.

Learning Experience III

OVERVIEW

Enabling Objective Given the assignment of demonstrating a manipulative skill, develop a detailed plan for demonstrating that skill.

Activity You will be selecting a manipulative skill to demonstrate.

Activity You will be developing a detailed plan for demonstrating that manipulative skill.

Feedback You will be evaluating your competency in preparing a detailed plan for demonstrating a manipulative skill, using the "Planning Checklist," pp. 37-38.

Activity ☞

Activity

Using your own occupational specialty as a frame of reference, select a manipulative skill, or check with your resource person to see if there is a particular manipulative skill which he/she wishes you to demonstrate.

Activity

Develop a detailed plan for demonstrating the manipulative skill you have selected. You may use the sample lesson plan on pp. 10-11, or a plan suggested by your resource person, to guide your planning.

Feedback

Feedback

Use the following performance components to check your competency in developing a detailed plan for demonstrating a manipulative skill. Place an X in the NO, PARTIAL, or FULL column to indicate that the performance component was not accomplished, partially accomplished, or fully accomplished, respectively. If, because of special circumstances, a performance component was **inappliable,** or impossible to execute, place an X in **the N/A column** instead.

PLANNING CHECKLIST

	LEVEL OF PERFORMANCE			
	N/A	NO	PARTIAL	FULL
1. The scope of the demonstration was sufficiently limited that students could digest it all..................				
2. The preparation portion of the plan includes plans for accomplishing the following: a. motivating students and gaining their interest....................				
b. explaining what you are going to do............................				
c. connecting what you are going to do with what students already know or have experienced..........				
d. connecting what you are going to do with future activities.........				
e. explaining any new terms..........				
3. The plan includes a listing of all tools, materials, supplies and visuals needed to demonstrate the manipulative skill................................				

	N/A	NO	PARTIAL	FULL
4. The presentation portion of the plan includes the following:				
a. a listing of each step necessary in performing the skill..........				
b. a brief explanation of each step..				
c. a listing of key points or specific techniques essential to successfully performing each step............................				
d. a listing of safety practices specific to the operation.........				
5. The plan provides for continuous student feedback throughout the demonstration via:				
a. a list of key questions to ask....				
b. plans for having selected student(s) repeat the demonstration in front of the class under teacher supervision (optional)....				
6. The plan provides for some type of lesson summary via at least one of the following:				
a. a list of key questions to ask..............................				
b. plans for having selected student(s) repeat the demonstration in front of the class under teacher supervision...............				
c. a verbal summary of the steps and key points by the teacher and/or student(s)......................				

LEVEL OF PERFORMANCE: All items must receive FULL, or N/A responses. If any item receives a NO, or PARTIAL response, revise your plan accordingly, or check with your resource person if necessary.

Learning Experience IV

OVERVIEW

Enabling Objective

In a simulated situation, demonstrate a manipulative skill.

Activity

You will be presenting a demonstration of a manipulative skill to a group of peers, or to your resource person.

Optional Activity

You may wish to record your demonstration on videotape for self-evaluation purposes.

Optional Activity

If peers are taking this module at the same time you are, you may each videotape your performance, and then meet to view and discuss each other's taped demonstrations.

Feedback

Your competency in demonstrating a manipulative skill will be evaluated by your peers or by your resource person, using the "Demonstration Checklist," pp. 43-45.

continued

Optional Feedback

If you videotaped your demonstration, you may wish to evaluate your own performance, using the "Demonstration Checklist," pp. 43-45.

Activity

Activity

In a simulated situation, present a manipulative skill demonstration to a group of 1-5 peers. These peers will serve two functions: (1) they will role play the students to whom you are presenting your demonstration, and (2) they will evaluate your performance. If peers are not available to you, you may present the demonstration to your resource person.

You must, of course, have prepared a detailed plan before you present the demonstration. If you completed Learning Experience III, you may use the plan you prepared at that time.

Six copies of the "Demonstration Checklist" are provided in this module. Give a copy to each peer before making your presentation in order to assure that each knows what to look for in your demonstration. However, indicate that during your demonstration, all attention is to be directed toward you, and that the checklists will be completed after the demonstration is finished.

Optional Activity

If you wish to self-evaluate, you may record your performance on videotape so you may view your own demonstration at a later time.

The sixth copy of the "Demonstration Checklist" is for your use in self-evaluating.

Optional Activity

If other peers in your service area are taking this module at the same time that you are, you could choose to videotape each demonstration. Then, you could meet as a group, view the taped demonstrations, and discuss and evaluate each.

Feedback

Feedback

Rate the teacher's level of performance on each of the following performance components involved in demonstrating a manipulative skill. Indicate the level of the teacher's accomplishment by placing an X in the appropriate column under the LEVEL OF PERFORMANCE heading. If, because of special circumstances, a performance component was inapplicable, or impossible to execute, place an X in the N/A column instead.

DEMONSTRATION CHECKLIST

Copy 1

	LEVEL OF PERFORMANCE					
	N/A	NONE	POOR	FAIR	GOOD	EXCELLENT
1. The physical environment was reasonably comfortable						
2. The physical setting for the demonstration was as close to reality as possible						
3. All necessary tools, materials, supplies and visuals were organized and at hand when the teacher needed them						
4. All tools, materials, supplies and visuals were in good condition						
5. The teacher introduced the demonstration with well-chosen questions						
6. The teacher provided explanations of: a. what was going to be demonstrated						
b. how it fit in with what the class already knew or had experienced						
c. how it fit in with future activities						

	N/A	NONE	POOR	FAIR	GOOD	EXCELLENT
7. The teacher defined any new terms which would be encountered during the demonstration						
8. The teacher motivated the class to want to learn the new skill						
9. Each step necessary to the operation was demonstrated						
10. Each step was explained as it was demonstrated						
11. The steps were presented in a logical order						
12. Key points or specific techniques essential to performing each step were explained						
13. Safety practices specific to the operation were covered						
14. If a step involved very small parts or intricate processes, the teacher used visuals or models to clarify the step						
15. If a step was normally time-consuming (i.e., "refrigerate batter overnight"), the teacher had completed the step ahead of time						
16. The procedure followed for the operation was the one most commonly used in the field						
17. The steps were presented slowly enough that students did not miss key points						
18. Every movement in the demonstration was clearly visible						

	N/A	NONE	POOR	FAIR	GOOD	EXCELLENT
19. If direction of movement was of special importance, students were positioned accordingly................						
20. The teacher could be clearly heard....						
21. The teacher talked to the students, and not to the materials..............						
22. The teacher performed the operation with ease............................						
23. The teacher set up standards of workmanship by doing a good thorough job................................						
24. The teacher encouraged questions......						
25. The teacher asked key questions throughout to assure that the students understood the demonstration....						
26. The teacher included some activity to summarize the steps and key points...............................						
27. The demonstration lasted no more than 15-20 minutes.........................						

LEVEL OF PERFORMANCE: All items must receive N/A, GOOD, or EXCELLENT responses. If any item receives a NONE, POOR, or FAIR response, discuss this with your resource person and, if necessary, the learning experience, or part of it, must be repeated.

Feedback

Rate the teacher's level of performance on each of the following performance components involved in demonstrating a manipulative skill. Indicate the level of the teacher's accomplishment by placing an X in the appropriate column under the LEVEL OF PERFORMANCE heading. If, because of special circumstances, a performance component was inapplicable, or impossible to execute, place an X in the N/A column instead.

DEMONSTRATION CHECKLIST

Copy 2

	LEVEL OF PERFORMANCE					
	N/A	NONE	POOR	FAIR	GOOD	EXCELLENT
1. The physical environment was reasonably comfortable...........................						
2. The physical setting for the demonstration was as close to reality as possible................................						
3. All necessary tools, materials, supplies and visuals were organized and at hand when the teacher needed them................................						
4. All tools, materials, supplies and visuals were in good condition.........						
5. The teacher introduced the demonstration with well-chosen questions....						
6. The teacher provided explanations of: a. what was going to be demonstrated............................						
b. how it fit in with what the class already knew or had experienced....						
c. how it fit in with future activities............................						

	N/A	NONE	POOR	FAIR	GOOD	EXCELLENT
7. The teacher defined any new terms which would be encountered during the demonstration						
8. The teacher motivated the class to want to learn the new skill						
9. Each step necessary to the operation was demonstrated						
10. Each step was explained as it was demonstrated						
11. The steps were presented in a logical order						
12. Key points or specific techniques essential to performing each step were explained						
13. Safety practices specific to the operation were covered						
14. If a step involved very small parts or intricate processes, the teacher used visuals or models to clarify the step						
15. If a step was normally time-consuming (i.e., "refrigerate batter overnight"), the teacher had completed the step ahead of time						
16. The procedure followed for the operation was the one most commonly used in the field						
17. The steps were presented slowly enough that students did not miss key points						
18. Every movement in the demonstration was clearly visible						

	N/A	NONE	POOR	FAIR	GOOD	EXCELLENT
19. If direction of movement was of special importance, students were positioned accordingly................						
20. The teacher could be clearly heard....						
21. The teacher talked to the students, and not to the materials.............						
22. The teacher performed the operation with ease............................						
23. The teacher set up standards of workmanship by doing a good thorough job..................................						
24. The teacher encouraged questions......						
25. The teacher asked key questions throughout to assure that the students understood the demonstration....						
26. The teacher included some activity to summarize the steps and key points................................						
27. The demonstration lasted no more than 15-20 minutes........................						

LEVEL OF PERFORMANCE: **All items must receive N/A, GOOD, or EXCELLENT responses. If any item receives a NONE, POOR, or FAIR response, discuss this with your resource person and, if necessary, the learning experience, or part of it, must be repeated.**

Feedback

Rate the teacher's level of performance on each of the following performance components involved in demonstrating a manipulative skill. Indicate the level of the teacher's accomplishment by placing an X in the appropriate column under the LEVEL OF PERFORMANCE heading. If, because of special circumstances, a performance component was inapplicable, or impossible to execute, place an X in the N/A column instead.

DEMONSTRATION CHECKLIST

Copy 3

	LEVEL OF PERFORMANCE					
	N/A	NONE	POOR	FAIR	GOOD	EXCELLENT
1. The physical environment was reasonably comfortable..............................						
2. The physical setting for the demonstration was as close to reality as possible..................................						
3. All necessary tools, materials, supplies and visuals were organized and at hand when the teacher needed them...................................						
4. All tools, materials, supplies and visuals were in good condition.........						
5. The teacher introduced the demonstration with well-chosen questions....						
6. The teacher provided explanations of: a. what was going to be demonstrated..........................						
b. how it fit in with what the class already knew or had experienced....						
c. how it fit in with future activities..............................						

	N/A	NONE	POOR	FAIR	GOOD	EXCELLENT
7. The teacher defined any new terms which would be encountered during the demonstration						
8. The teacher motivated the class to want to learn the new skill						
9. Each step necessary to the operation was demonstrated						
10. Each step was explained as it was demonstrated						
11. The steps were presented in a logical order						
12. Key points or specific techniques essential to performing each step were explained						
13. Safety practices specific to the operation were covered						
14. If a step involved very small parts or intricate processes, the teacher used visuals or models to clarify the step						
15. If a step was normally time-consuming (i.e., "refrigerate batter overnight"), the teacher had completed the step ahead of time						
16. The procedure followed for the operation was the one most commonly used in the field						
17. The steps were presented slowly enough that students did not miss key points						
18. Every movement in the demonstration was clearly visible						

	N/A	NONE	POOR	FAIR	GOOD	EXCELLENT
19. If direction of movement was of special importance, students were positioned accordingly...............						
20. The teacher could be clearly heard....						
21. The teacher talked to the students, and not to the materials.............						
22. The teacher performed the operation with ease.............................						
23. The teacher set up standards of workmanship by doing a good thorough job...................................						
24. The teacher encouraged questions......						
25. The teacher asked key questions throughout to assure that the students understood the demonstration....						
26. The teacher included some activity to summarize the steps and key points................................						
27. The demonstration lasted no more than 15-20 minutes.........................						

LEVEL OF PERFORMANCE: All items must receive N/A, GOOD, or EXCELLENT responses. If any item receives a NONE, POOR, or FAIR response, discuss this with your resource person and, if necessary, the learning experience, or part of it, must be repeated.

Feedback

Rate the teacher's level of performance on each of the following performance components involved in demonstrating a manipulative skill. Indicate the level of the teacher's accomplishment by placing an X in the appropriate column under the LEVEL OF PERFORMANCE heading. If, because of special circumstances, a performance component was inapplicable, or impossible to execute, place an X in the N/A column instead.

DEMONSTRATION CHECKLIST

Copy 4

	LEVEL OF PERFORMANCE					
	N/A	NONE	POOR	FAIR	GOOD	EXCELLENT
1. The physical environment was reasonably comfortable						
2. The physical setting for the demonstration was as close to reality as possible						
3. All necessary tools, materials, supplies and visuals were organized and at hand when the teacher needed them						
4. All tools, materials, supplies and visuals were in good condition						
5. The teacher introduced the demonstration with well-chosen questions						
6. The teacher provided explanations of: a. what was going to be demonstrated						
b. how it fit in with what the class already knew or had experienced						
c. how it fit in with future activities						

	N/A	NONE	POOR	FAIR	GOOD	EXCELLENT
7. The teacher defined any new terms which would be encountered during the demonstration....................						
8. The teacher motivated the class to want to learn the new skill..........						
9. Each step necessary to the operation was demonstrated...................						
10. Each step was explained as it was demonstrated..........................						
11. The steps were presented in a logical order..........................						
12. Key points or specific techniques essential to performing each step were explained.......................						
13. Safety practices specific to the operation were covered...............						
14. If a step involved very small parts or intricate processes, the teacher used visuals or models to clarify the step............................						
15. If a step was normally time-consuming (i.e., "refrigerate batter overnight"), the teacher had completed the step ahead of time........						
16. The procedure followed for the operation was the one most commonly used in the field....................						
17. The steps were presented slowly enough that students did not miss key points..........................						
18. Every movement in the demonstration was clearly visible..................						

	N/A	NONE	POOR	FAIR	GOOD	EXCELLENT
19. If direction of movement was of special importance, students were positioned accordingly................						
20. The teacher could be clearly heard....						
21. The teacher talked to the students, and not to the materials..............						
22. The teacher performed the operation with ease..............................						
23. The teacher set up standards of workmanship by doing a good thorough job................................						
24. The teacher encouraged questions......						
25. The teacher asked key questions throughout to assure that the students understood the demonstration....						
26. The teacher included some activity to summarize the steps and key points................................						
27. The demonstration lasted no more than 15-20 minutes..........................						

LEVEL OF PERFORMANCE: All items must receive N/A, GOOD, or EXCELLENT responses. If any item receives a NONE, POOR, or FAIR response, discuss this with your resource person and, if necessary, the learning experience, or part of it, must be repeated.

Feedback

Rate the teacher's level of performance on each of the following performance components involved in demonstrating a manipulative skill. Indicate the level of the teacher's accomplishment by placing an X in the appropriate column under the LEVEL OF PERFORMANCE heading. If, because of special circumstances, a performance component was inapplicable, or impossible to execute, place an X in the N/A column instead.

DEMONSTRATION CHECKLIST

Copy 5

	LEVEL OF PERFORMANCE					
	N/A	NONE	POOR	FAIR	GOOD	EXCELLENT
1. The physical environment was reasonably comfortable..........................						
2. The physical setting for the demonstration was as close to reality as possible..............................						
3. All necessary tools, materials, supplies and visuals were organized and at hand when the teacher needed them..................................						
4. All tools, materials, supplies and visuals were in good condition........						
5. The teacher introduced the demonstration with well-chosen questions....						
6. The teacher provided explanations of: a. what was going to be demonstrated...........................						
b. how it fit in with what the class already knew or had experienced....						
c. how it fit in with future activities............................						

		N/A	NONE	POOR	FAIR	GOOD	EXCELLENT
7.	The teacher defined any new terms which would be encountered during the demonstration						
8.	The teacher motivated the class to want to learn the new skill						
9.	Each step necessary to the operation was demonstrated						
10.	Each step was explained as it was demonstrated						
11.	The steps were presented in a logical order						
12.	Key points or specific techniques essential to performing each step were explained						
13.	Safety practices specific to the operation were covered						
14.	If a step involved very small parts or intricate processes, the teacher used visuals or models to clarify the step						
15.	If a step was normally time-consuming (i.e., "refrigerate batter overnight"), the teacher had completed the step ahead of time						
16.	The procedure followed for the operation was the one most commonly used in the field						
17.	The steps were presented slowly enough that students did not miss key points						
18.	Every movement in the demonstration was clearly visible						

	N/A	NONE	POOR	FAIR	GOOD	EXCELLENT
19. If direction of movement was of special importance, students were positioned accordingly................						
20. The teacher could be clearly heard....						
21. The teacher talked to the students, and not to the materials..............						
22. The teacher performed the operation with ease..............................						
23. The teacher set up standards of workmanship by doing a good thorough job................................						
24. The teacher encouraged questions......						
25. The teacher asked key questions throughout to assure that the students understood the demonstration....						
26. The teacher included some activity to summarize the steps and key points..............................						
27. The demonstration lasted no more than 15-20 minutes.........................						

LEVEL OF PERFORMANCE: All items must receive N/A, GOOD, or EXCELLENT responses. If any item receives a NONE, POOR, or FAIR response, discuss this with your resource person and, if necessary, the learning experience, or part of it, must be repeated.

Feedback

Rate the teacher's level of performance on each of the following performance components involved in demonstrating a manipulative skill. Indicate the level of the teacher's accomplishment by placing an X in the appropriate column under the LEVEL OF PERFORMANCE heading. If, because of special circumstances, a performance component was inapplicable, or impossible to execute, place an X in the N/A column instead.

DEMONSTRATION CHECKLIST

Copy 6

	LEVEL OF PERFORMANCE					
	N/A	NONE	POOR	FAIR	GOOD	EXCELLENT
1. The physical environment was reasonably comfortable..........................						
2. The physical setting for the demonstration was as close to reality as possible..............................						
3. All necessary tools, materials, supplies and visuals were organized and at hand when the teacher needed them................................						
4. All tools, materials, supplies and visuals were in good condition.........						
5. The teacher introduced the demonstration with well-chosen questions....						
6. The teacher provided explanations of: a. what was going to be demonstrated..........................						
b. how it fit in with what the class already knew or had experienced....						
c. how it fit in with future activities..............................						

	N/A	NONE	POOR	FAIR	GOOD	EXCELLENT
7. The teacher defined any new terms which would be encountered during the demonstration....................						
8. The teacher motivated the class to want to learn the new skill..........						
9. Each step necessary to the operation was demonstrated....................						
10. Each step was explained as it was demonstrated.........................						
11. The steps were presented in a logical order........................						
12. Key points or specific techniques essential to performing each step were explained......................						
13. Safety practices specific to the operation were covered...............						
14. If a step involved very small parts or intricate processes, the teacher used visuals or models to clarify the step............................						
15. If a step was normally time-consuming (i.e., "refrigerate batter overnight"), the teacher had completed the step ahead of time........						
16. The procedure followed for the operation was the one most commonly used in the field....................						
17. The steps were presented slowly enough that students did not miss key points..........................						
18. Every movement in the demonstration was clearly visible..................						

	N/A	NONE	POOR	FAIR	GOOD	EXCELLENT
19. If direction of movement was of special importance, students were positioned accordingly						
20. The teacher could be clearly heard						
21. The teacher talked to the students, and not to the materials						
22. The teacher performed the operation with ease						
23. The teacher set up standards of workmanship by doing a good thorough job						
24. The teacher encouraged questions						
25. The teacher asked key questions throughout to assure that the students understood the demonstration						
26. The teacher included some activity to summarize the steps and key points						
27. The demonstration lasted no more than 15-20 minutes						

LEVEL OF PERFORMANCE: All items must receive N/A, GOOD, or EXCELLENT responses. If any item receives a NONE, POOR, or FAIR response, discuss this with your resource person and, if necessary, the learning experience, or part of it, must be repeated.

Learning Experience V *

FINAL EXPERIENCE

Terminal Objective

In an actual school situation,** demonstrate a manipulative skill.

Activity

Select a manipulative skill from your occupational specialty and develop a comprehensive plan for demonstrating that skill.

Activity

Present the manipulative skill demonstration to a class you are responsible for teaching. Arrange in advance to have your resource person observe your presentation.

Feedback

Your total competency will be assessed by your resource person, using the "Teacher Performance Assessment Form," pp. 49-53.

Based upon the criteria specified in this assessment instrument, your resource person will determine whether you are competent in demonstrating a manipulative skill.

---

*You may choose to complete this learning experience without completing the first four learning experiences if you think you have the proficiency to do so.

If you are unsure of what is meant by "actual **school situation," review the definition given on p. 5.

Feedback

Feedback

Rate the teacher's level of performance on each of the following performance components involved in planning for and presenting a manipulative skill demonstration. Indicate the level of the teacher's accomplishment by placing an X in the appropriate column under the LEVEL OF PERFORMANCE heading. If, because of special circumstances, a performance component was inapplicable, or impossible to execute, place **an X in the N/A column instead**.

TEACHER PERFORMANCE ASSESSMENT FORM

	LEVEL OF PERFORMANCE					
	N/A	NONE	POOR	FAIR	GOOD	EXCELLENT
1. The scope of the demonstration was sufficiently limited that students could digest it all..................						
2. The preparation portion of the plan includes plans for accomplishing the following: a. motivating students and gaining their interest..................						
b. explaining what will be demonstrated..........................						
c. connecting what the demonstration has to do with what students already know or have experienced..						
d. connecting what the demonstration has to do with future activities.......................						
e. explaining any new terms.........						

	N/A	NONE	POOR	FAIR	GOOD	EXCELLENT
3. The plan includes a listing of all tools, materials, supplies and visuals needed to demonstrate the manipulative skill..............................						
4. The presentation portion of the plan includes the following: a. a listing of each step necessary in performing the skill...........						
b. a brief explanation of each step..............................						
c. a listing of key points or specific techniques essential to successfully performing each step..............................						
d. a listing of safety practices specific to the operation.........						
5. The plan provides for continuous student feedback throughout the demonstration via: a. a list of key questions to ask....						
b. plans for having selected student(s) repeat the demonstration in front of the class under teacher supervision (optional)....						
6. The plan provides for some type of lesson summary via at least one of the following: a. a list of key questions to ask....						
b. plans for having selected student(s) repeat the demonstration in front of the class under teacher supervision..............						

	N/A	NONE	POOR	FAIR	GOOD	EXCELLENT
c. a verbal summary of the steps and key points by the teacher and/or student(s)................						
7. The physical environment was reasonably comfortable.....................						
8. The physical setting for the demonstration was as close to reality as possible.............................						
9. All necessary tools, materials, supplies and visuals were organized and at hand when the teacher needed them.................................						
10. All tools, materials, supplies and visuals were in good condition........						
11. The teacher introduced the demonstration with well-chosen questions...						
12. The teacher provided explanations of: a. what was going to be demonstrated..........................						
b. how it fit in with what the class already knew or had experienced............................						
c. how it fit in with future activities......................						
13. The teacher defined any new terms which would be encountered during the demonstration....................						
14. The teacher motivated the class to want to learn the new skill...........						
15. Each step necessary to the operation was demonstrated.....................						

	N/A	NONE	POOR	FAIR	GOOD	EXCELLENT
16. Each step was explained as it was demonstrated						
17. The steps were presented in a logical order						
18. Key points or specific techniques essential to performing each step were explained						
19. Safety practices specific to the operation were covered						
20. If a step involved very small parts or intricate processes, the teacher used visuals or models to clarify the step						
21. If a step was normally time-consuming (i.e., "refrigerate batter overnight"), the teacher had completed the step ahead of time						
22. The procedure followed for the operation was the one most commonly used in the field						
23. The steps were presented slowly enough that students did not miss key points						
24. Every movement in the demonstration was clearly visible						
25. If direction of movement was of special importance, students were positioned accordingly						
26. The teacher could be clearly heard						
27. The teacher talked to the students, and not to the materials						
28. The teacher performed the operation with ease						

	N/A	NONE	POOR	FAIR	GOOD	EXCELLENT
29. The teacher set up standards of workmanship by doing a good thorough job						
30. The teacher encouraged questions						
31. The teacher asked key questions thoroughout to assure that the students understood the demonstration						
32. The teacher included some activity to summarize the steps and key points						
33. The demonstration lasted no more than 15-20 minutes						

LEVEL OF PERFORMANCE: All items must receive N/A, GOOD, or EXCELLENT responses. If any item receives a NONE, POOR, or FAIR response, discuss this with your resource person and, if necessary, the learning experience, or part of it, must be repeated.

APPENDIX G

Sample Advanced Test Data

Appendix G removed because of confidential information

APPENDIX H

Announcement Brochure
and
Sample Module
Published Version
(100 modules)

227

About the modules

WHAT ARE THEY?

Each of the 100 modules is a performance-based teacher education (PBTE) learning package focusing upon a specific professional teacher competency. The modules are based on competencies verified as important to successful vocational teaching. Each module provides learning experiences which integrate theory and application, and each culminates with criterion-referenced assessment of the teacher's performance of the specified competency.

WHO CAN USE THEM?

The materials are intended for use in the training of both secondary and post-secondary, preservice and inservice vocational teachers in all service areas. They may be implemented by universities and colleges, state departments of education, post-secondary institutions, local education agencies, and others responsible for the professional development of vocational teachers.

WHAT TRAINING IS REQUIRED FOR THEIR USE?

In a truly performance-based program, the resource person (e.g., university teacher educator, supervising teacher, school administrator, area supervisor, personnel development officer, etc.) has a unique and crucial teacher training role. The Center's field testing experience with 18 institutions further reinforces the need for the training of users. Hence, both the developer and publisher strongly recommend that institutions using these materials arrange for the provision of adequate training to ensure the most effective use of the materials.

WHEN WILL THEY BE AVAILABLE?

The modules are now being prepared for publication. The published edition will reflect findings from advanced testing conducted at 17 universities and one post-secondary institution. The A, B, C, D, E, F, and H modules and the supporting materials are available now. The J, I, and G modules are scheduled for printing (in that order) in early 1976.

HOW DO I GET FURTHER INFORMATION?

Further information is available from the publisher, AAVIM. Contact AAVIM, 120 Engineering Center, Athens, Georgia 30602, regarding which modules you are interested in obtaining. Your name will be placed on a mailing list, and you will be notified of module availability and prices as soon as the information becomes available. For further information concerning training in the use of modules, contact Dr. James B. Hamilton at The Center for Vocational Education, The Ohio State University, 1960 Kenny Road, Columbus, Ohio 43210.

ANNOUNCING
The Center's
PBTE
MODULES

Developed by:

THE CENTER FOR VOCATIONAL EDUCATION

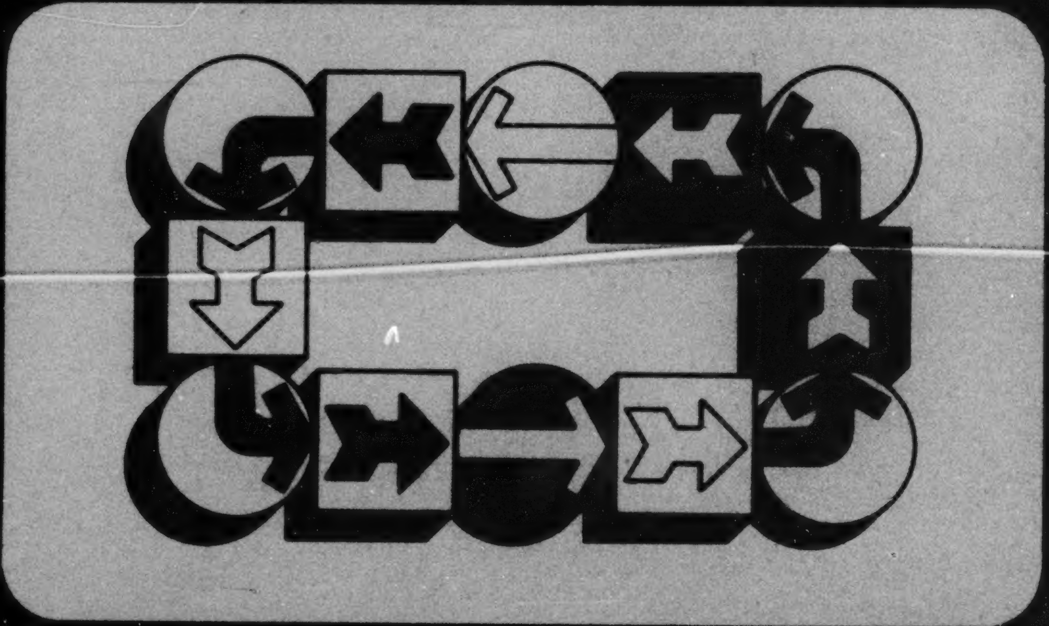
Published by:

AAVIM

American Association
for Vocational
Instructional Materials
Engineering Center
Athens, Georgia 30602

ED149080

Demonstrate a Manipulative Skill



FOREWORD

This module is one of a series of 100 performance-based teacher education (PBTE) learning packages focusing upon specific professional competencies of vocational teachers. The competencies upon which these modules are based were identified and verified through research as being important to successful vocational teaching at both the secondary and post-secondary levels of instruction. The modules are suitable for the preparation of teachers in all occupational areas.

Each module provides learning experiences that integrate theory and application; each culminates with criterion referenced assessment of the teacher's performance of the specified competency. The materials are designed for use by individual or groups of teachers in training working under the direction and with the assistance of teacher educators acting as resource persons. Resource persons should be skilled in the teacher competency being developed and should be thoroughly oriented to PBTE concepts and procedures in using these materials.

The design of the materials provides considerable flexibility for planning and conducting performance-based preservice and inservice teacher preparation programs to meet a wide variety of individual needs and interests. The materials are intended for use by universities and colleges, state departments of education, post-secondary institutions, local education agencies, and others responsible for the professional development of vocational teachers. Further information about the use of the modules in teacher education programs is contained in three related documents: **Student Guide to Using Performance-Based Teacher Education Materials, Resource Person Guide to Using Performance-Based Teacher Education Materials** and **Guide to Implementation of Performance-Based Teacher Education.**

The PBTE curriculum packages are products of a sustained research and development effort by The Center's Program for Professional Development for Vocational Education. Many individuals, institutions, and agencies participated with The Center and have made contributions to the systematic development, testing, revision, and refinement of these very significant training materials. Over 40 teacher educators provided input in development of initial versions of the modules; over 2,000 teachers and 300 resource persons in 20 universities, colleges, and post-secondary institutions used the materials and provided feedback to The Center for revision and refinement.

Special recognition for major individual roles in the direction, development, coordination of testing, revision, and refinement of these materials is extended to the following program staff: James B. Hamilton, Program Director; Robert E. Norton, Associate Program Director; Glen E. Fardig, Specialist; Lois Harrington, Program Assistant; and Karen Quinn, Program Assistant. Recognition is also extended to Kristy Ross, Technical Assistant; Joan Jones, Technical Assistant; and Jean Wisenbaugh, Artist for their contributions to the final refinement of the materials. Contributions made by former program staff toward developmental versions of these materials are also acknowledged. Calvin J. Cotrell directed the vocational teacher competency research studies upon which these modules are based and also directed the curriculum development effort from 1971–1972. Curtis R. Finch provided leadership for the program from 1972–1974.

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THE CENTER FOR VOCATIONAL EDUCATION
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MODULE

C–16

Demonstrate a Manipulative Skill

MODULE C–16 OF CATEGORY C—INSTRUCTIONAL EXECUTION
PROFESSIONAL TEACHER EDUCATION MODULE SERIES

The Center for Vocational Education
The Ohio State University

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INTRODUCTION

Good teachers are constantly searching for ways to present their lessons in a stimulating and interesting way. The procedures and methods which are most appropriate to any one lesson will depend on the nature of the subject matter being taught and the different ways in which people learn.

In vocational education, a major part of the teaching responsibility involves manipulative operations—changing the form of something, or moving something. Students in all vocational service areas will need to master certain manipulative skills: preparing a crepe suzette, making a dowel joint, changing a typewriter ribbon or cash register tape, sterilizing surgical instruments, or operating a milking machine. Since this is a dominant part of vocational programs, all vocational teachers should be competent in effective ways of teaching manipulative operations.

The demonstration is a basic and popular method of presenting a manipulative skill. Demonstrations may be defined as visualized explanations of important facts, ideas, or processes. In broader terms, demonstrations are considered to be audiovisual explanations. Students observing a teacher effectively demonstrating a manipulative skill can see each step of the process performed and hear explanations of key points which are essential to successfully performing the skill.

However, without proper planning and preparation, the demonstration can be very unproductive. If students cannot see all aspects of the presentation or hear the teacher's explanations . . . if all materials and equipment are not available or serviceable . . . if key steps are overlooked . . . then, the value of the presentation is lost.

The learning experiences in this module are designed to help you develop competency in preparing the kind of lesson plan needed for an effective manipulative demonstration. In addition, you will gain skill in actually preparing for and demonstrating the manipulative skills needed by students in your occupational specialty.

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ABOUT THIS MODULE

Objectives

Terminal Objective: In an actual school situation, demonstrate a manipulative skill. Your performance will be assessed by your resource person, using the Teacher Performance Assessment Form, pp. 35–36 (*Learning Experience III*).

Enabling Objectives:

1. After completing the required reading, demonstrate knowledge of the steps and procedures involved in demonstrating a manipulative skill (*Learning Experience I*).
2. In a simulated classroom or laboratory situation, demonstrate a manipulative skill (*Learning Experience II*).

Prerequisites

To complete this module, you must have competency in developing a lesson plan. If you do not already have this competency, meet with your resource person to determine what method you will use to gain this skill. One option is to complete the information and practice activities in the following module:

- *Develop a Lesson Plan*, Module B–4

Resources

A list of the outside resources which supplement those contained within the module follows. Check with your resource person (1) to determine the availability and the location of these resources, (2) to locate additional references in your occupational specialty, and (3) to get assistance in setting up activities with peers or observations of skilled teachers, if necessary. Your resource person may also be contacted if you have any difficulty with directions, or in assessing your progress at any time.

Learning Experience I

Optional

The videotape, "Demonstration," Stillwater, Oklahoma, Educational Television Service.

A locally-produced videotape (or a television program) of a teacher demonstrating a manipulative skill which you can view for the purpose of critiquing that teacher's performance.

Videotape equipment for viewing a videotaped manipulative skill demonstration.

Learning Experience II

Required

1–5 peers to role-play students to whom the lesson involving a manipulative skill demonstration is being presented, and to critique your performance in demonstrating a manipulative skill. If peers are unavailable, you may present your lesson to your *resource person*.

Optional

Videotape equipment for taping, viewing, and self-evaluating your presentation.

Learning Experience III

Required

An actual school situation in which you can demonstrate a manipulative skill.

A resource person to assess your competency in demonstrating a manipulative skill.

This module covers performance element number 110 from Calvin J. Cotrell *et al.*, *Model Curricula for Vocational and Technical Education: Report No. V* (Columbus, OH: The Center for Vocational Education, The Ohio State University, 1972). The 384 elements in this document form the research base for all The Center's PBTE module development.

For information about the general organization of each module, general procedures for their use, and terminology which is common to all 100 modules, see About Using The Center's PBTE Modules on the inside back cover.

Learning Experience I

OVERVIEW

Enabling Objective

After completing the required reading, demonstrate knowledge of the steps and procedures involved in demonstrating a manipulative skill.

Activity

You will be reading the information sheet, Demonstrating a Manipulative Skill, pp. 6–11.

Optional Activity

You may wish to view the videotape, "Demonstration," or a locally-produced videotape of a teacher demonstrating a manipulative skill, and to critique that teacher's performance. You might also wish to view a demonstration being presented on the television as part of the regular broadcasting schedule.

Activity

You will be demonstrating knowledge of the steps and procedures involved in demonstrating a manipulative skill by completing the Self-Check, pp. 12–14.

Feedback

You will be evaluating your competency by comparing your completed Self-Check with the Model Answers, p. 15.

Activity

For information defining the demonstration method of teaching and explaining the steps and procedures involved in this method, read the following information sheet:

DEMONSTRATING A MANIPULATIVE SKILL

One of the basic methods for introducing new skills to the learner is through a demonstration. Wiring an electrical outlet, making a buttonhole, planting a tree, or producing a customer statement with a billing machine—each involves manipulative skills that can be presented through demonstration.

Showing students how new skills should be performed appears so direct and simple to the inexperienced teacher that it would seem hard to go wrong. Many teachers fail to present new skills effectively, however, because they neglect one or more of a few simple procedures that are essential to good demonstrations.

It is generally agreed that "Demonstration Teaching" should consist of the following four basic steps:

1. **Preparation.**—This step involves preparing the students for the lesson and motivating them to watch and listen.
2. **Presentation.**—During the lesson, you present the skills, showing students the succession of steps and exploring key points that make the operation a success.
3. **Application.**—Following your presentation, you need to provide each student with an opportunity to practice the skill under supervision.
4. **Testing or Follow-up.**—The final step is to evaluate each student's performance of the skill.

The lesson plan shown in Sample 1 provides for planning these four basic steps. You may have used a similar format in the prerequisite module, *Develop a Lesson Plan*, or your resource person may provide a similar planning form for you to use.

Although the "Application" and "Testing or Follow-up" steps are essential parts of teaching a manipulative skill, the major focus of the remainder of this information sheet will be upon what you, as a vocational teacher, need to do in planning for the demonstration, preparing the students, and presenting the skill.[1]

Preparing for the Demonstration

First, you should examine the student performance objectives for the lesson to be sure that the lesson to be presented is indeed appropriate for, and lends itself to, the demonstration method. In other words, there is a manipulative skill to be learned. Secondly, you should have clearly in mind what is to be demonstrated.

Furthermore, you may find that one lesson will not be sufficient. If there are many technical terms (or other cognitive information) which students need to know in order to understand the demonstration, then an informational type lesson should be planned to precede the demonstration. When this is done, students will be better prepared to follow your directions and explanations during the demonstration. Normally, a demonstration should not last for more than 15–20 minutes, since students are called upon for a rather high degree of attention and concentration during a demonstration. Often, manipulative skills which require a great number of steps to complete can be broken down into segments of two or more demonstrations.

You then need to prepare a lesson plan which identifies each step necessary in performing the specific skill to be demonstrated. These steps should be organized and listed in a sequence which is appropriate to the skill being demonstrated. In most cases, there will be a chronological sequence (first you do this; secondly you do that). However, you will also need to sequence steps involving safety and other related topics. The lesson plan should also identify, in conjunction with each step, key points or specific techniques essential to successfully performing that step. Safety practices specific to the operation should also be listed under key points. The presentation section of the plan shown in Sample 1 makes provision for listing "Steps" in one column and "Key Points" in another column. Teachers often reproduce this section of their lesson plan as a "Job Sheet" or "Operation Sheet." These sheets can then be provided to each student during or following the demonstration for reference during the application phase of the lesson.

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[1] To gain skill in the areas of application, testing, and follow-up, you may wish to refer to Module C–7, *Direct Student Laboratory Experience*, and Module D–4, *Assess Student Performance: Skills*.

SAMPLE 1

MODEL LESSON PLAN: Manipulative Skills

Unit 3
Lesson 2

JOB (or operation): Using the Marking Gauge

AIM (or purpose): to help students achieve skill in the use of the marking gauge in the construction of custom cabinetwork

TOOLS AND EQUIPMENT: standard marking gauge for woodworking; 1 foot rule; try square; pencil

MATERIALS: cabinet frame, ready for laying out mortise and tenon

TEACHING AIDS: chart showing gauge parts; working drawing of cabinet

REFERENCES: Fierer. Cabinetmaking and Millwork.

I. PREPARATION (of the student)

The marking gauge is one of the tools most commonly used by cabinetmakers.

It provides a very accurate method of marking lines on wood parallel to a side or edge. Also, more rapid than using rule and straightedge.

It requires more skill in its use than it looks.

II. PRESENTATION (of the skills):

Operations or Steps	Key Points (things to remember to do or say)
Set the gauge to desired measure.	Name parts of gauge (use chart). Show how to adjust head.
Check the setup with a rule—Measure between spur and beam.	Better accuracy—try on scrap.
Hold gauge in right hand.	Demonstrate correct grip.
Run the gauge against the stock.	Demonstrate wrist action. Run gauge away from operator.
Darken with pencil if necessary	
Mark all pieces at the same time before resetting gauge.	Lay out mortise and tenon joint as example (use working drawings for specs). Emphasize accuracy.

III. APPLICATION (practice by student under close supervision)

Practice using gauge on scrap stock until correct technique is established.

Each student will present a marked piece of scrap stock for check by instructor.

IV. TEST (performance of skill to acceptable standards)

Students will proceed to gauge the stock for a mortise and tenon joint to required dimensions. Instructor will check against working drawings.

Suggested Reading for Student:

Hammond. Wood Technology, pp. 61-63.

DENTAL ASSISTANT'S TOOLS

After the lesson plan has been prepared you need to make sure that all tools, materials, supplies, and visuals are at hand before you start the demonstration. A sure way to destroy the effectiveness of an otherwise good demonstration is to have to interrupt the demonstration at a critical point to hunt up a needed item. In addition, you need to make sure that all items are in good condition and properly organized in advance. Consider the humiliation of finding out in the middle of your demonstration that your knife is dull, your wrench is broken, or you brought the wrong lens for the camera.

Sometimes, partially completed items must be prepared ahead of time when the processes or operations being demonstrated require that considerable time be spent completing one step of the process. If several minutes or hours of doing the same thing are required, or a lapse of time is necessary such as might be the case when a recipe calls for refrigerating a mix, you should complete this time-consuming step ahead of time. Then, during the demonstration, you can bring out and substitute the previously prepared item when needed in order to be able to complete the demonstration in a reasonable amount of time. The plan shown in Sample 1 provides for listing equipment, tools, materials, and teaching aids needed for the demonstration.

As part of your preparation, you need to arrange the physical setting in which you will conduct the demonstration so that each student will be able to see every movement and hear every direction or explanation clearly. The conditions under which you perform the demonstration should closely match actual conditions on the job if appropriate or possible.

However, if the student is to learn from observing you, then both students and equipment will need to be arranged so this can happen. If direction of movement is of special importance, students should be positioned to view the demonstration over your shoulder or from approximately the same angle as they would view their own performance of the operation. If the demonstration is one involving precision movement or very small objects, you might be able to arrange for students to view it close up on a television monitor. You could also develop visuals showing enlargements of the parts, or models which you could use to show students the needed details at critical points in the demonstration. Do **not** attempt to pass objects around the group for inspection during a demonstration. This is a sure way to divert attention from the demonstration itself.

DENTAL HYGIENIST: CLEANING TEETH

It is also important to consider students' physical comfort. Attention may fall off rapidly if students are forced into an uncomfortable position in order to observe. If possible, arrange seating around the demonstration area, preferably using tablet armchairs so that students can take notes as the demonstration proceeds. If the group is large, or the demonstration surface is difficult to see, risers (such as are often used in a gymnasium) may be a good solution.

Poor lighting, poor ventilation, or a noisy location in the laboratory can also adversely affect students' attention. You can improve lighting by arranging special light stands that flood the demonstration site with light. This will not only increase the students' chance to see what is going on, but will dramatize the setting and concentrate student attention. Noise and distraction from other laboratory activities can be controlled by surrounding the demonstration area with movable screens.

For some demonstrations involving hazardous operations, you may need to provide students with safety goggles or protective clothing. If the demonstrated operation can be expected to produce noxious fumes, arrange a floor ventilating fan to move the air away from the student observers.

Before presenting your demonstration to your students, it is often advisable to practice your demonstration step by step following the outline you will use. This is especially important when you have not given the particular demonstration for some period of time. This procedure should help build your own confidence in being able to present the demonstration skillfully. It can also serve as a check to see that you have not omitted essential steps or failed to have all equipment and materials properly prepared. It may feel awkward at first, but it is often helpful to practice in front of a full length mirror so you can see how your performance will look to students.

Motivating Students

You need to introduce the demonstration with a discussion of the job to be done. A series of well-chosen questions can lead the students into the topic. You should have outlined in your lesson plan under "Preparation" how you intend to gain students' interest. Unless you are able to explain what you are going to do, and connect it with what the students already know or have done, students may miss several essential points. They may be concentrating on discovering the point of the demonstration rather than focusing on the demonstration itself.

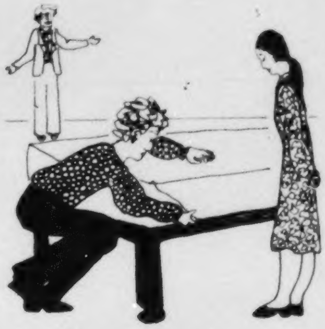
Through questioning and discussion you can determine if the students know what is to be done and find out what they know about it. Show enthusiasm in questioning,[2] citing applications and showing the importance of being able to do the job well.

Presenting the Demonstration

The following are important procedures to follow in presenting the demonstration for which you have prepared.

- Show and explain completely the procedure by going through the process step by step.
- Perform the demonstration slowly enough so that students do not miss key points, taking up one step at a time. Emphasize special techniques for doing a good job.
- Be sure to explain new terms. Have a chalkboard handy, with new terms written on it. Talk to your students, not to your equipment. Stop talking when you are at a critical or hazardous point.
- Emphasize safe practices as you proceed. Do not show "how not to do it." Use only the correct practices yourself during the demonstration.
- Be definite by showing the best procedure to do the job—the one that is commonly used in the field. Don't confuse students by showing several procedures.
- Question your students as the demonstration proceeds to ensure their understanding of each step and to get them to think through the job.
- Watch for nonverbal clues from students indicating how well they are following or responding to the demonstration. Blank expressions, furtive glances at the clock, or perplexed expressions should cue you to the need to repeat some portion of the demonstrations or recapture attention before proceeding.
- Set up standards of workmanship by doing a good thorough job that will challenge your students' ability.
- Encourage your students by showing how easy it is to perform difficult manipulative jobs when they are done properly.
- Summarize the steps and key points. You may find it necessary to repeat the demonstration for some students.
- Ask summarizing questions. Do not simply say, "Are there any questions?" Plan specific questions to ask that require students to respond in such a way that you will get feedback on how well they have understood the demonstration.

One way of involving students in summarization and reinforcement following the teacher's demonstration is to have a student repeat the demonstration. The following is one of several variations in demonstration procedure that may be utilized which involves student participation in the demonstration:



- First, the teacher performs the operation and tells what is occurring.
- Then, a student performs the operation while the teacher tells what is occurring.
- Then, another student performs the operation and tells what is occurring.

When students are involved in the demonstration as outlined, opportunity for reinforcement of learning is provided. In addition, you are provided with immediate feedback regarding the effectiveness of the demonstration. However, do not put a slower learner on the spot, forcing him/her to fail publicly and face humiliation or perhaps danger.

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[2] To gain skill in the use of questions, you may wish to refer to Module C-12, *Employ Oral Questioning Techniques*.

When you are assured that the students understand the process and are ready to practice the skill demonstrated, students should be directed to the "Application" phase of the lesson. During this phase, provision should be made for students to practice the skills in the laboratory, on the job, or at home.

Optional Activity

For a view of how one teacher learned to make effective manipulative skill demonstrations, you may wish to view the videotape, "Demonstration," produced by the departments of Agricultural and Home Economics Education and the School of Occupational and Adult Education at Oklahoma State University. This videotape shows a teacher demonstrating the same skill twice, once poorly and once effectively. It is very helpful in illustrating why it is important to follow the recommended steps and procedures in planning and demonstrating a manipulative skill.

Your institution may have available other videotapes showing examples of teachers demonstrating manipulative skills. If so, you may wish to view one or more of these videotapes. You might also choose to critique the performance of each teacher in demonstrating a manipulative skill, using the criteria provided in this module, or critique forms or checklists provided by your resource person.

Another possibility is to identify a television program involving a manipulative skill demonstration. For example, a home economics teacher could watch a cooking expert such as Julia Child to see how she demonstrates cooking skills.

Activity

The following items check your comphrehension of the material in the information sheet, Demonstrating a Manipulative Skill, pp. 6–11. Each of the six items requires a short essay-type response. Please explain fully, but briefly, and make sure you respond to all parts of each item.

SELF-CHECK

1. Explain why the demonstration method of teaching is especially appropriate for teaching manipulative skills.

2. If a teacher is highly experienced in a particular manipulative skill, why should that teacher prepare a lesson plan before giving a demonstration?

3. Why should a teacher practice the demonstration prior to presenting it to the class?

4. Is showing students several ways of performing the skill a good idea? Why or why not?

5. How can a teacher be sure that the students understand what is being done during the demonstration and why it is being done?

6. What types of summarization activities can a teacher use to conclude a demonstration effectively?

Feedback

Compare your written responses on the Self-Check with the Model Answers given below. Your responses need not exactly duplicate the model responses; however, you should have covered the same **major** points.

MODEL ANSWERS

1. When a manipulative skill is to be learned by students, they need to learn a number of things all at once: (1) a succession of steps, (2) the order in which to perform those steps, (3) the techniques involved in performing those steps, and (4) the safety precautions involved. The most straightforward way to learn all this is to **see** it actually performed and **hear** it explained simultaneously; i.e., to have it demonstrated.

2. Being able to perform a skill yourself does not guarantee that you can **explain** how to perform that skill. For persons who are especially skilled at an operation, that operation has become almost automatic. When you first learned division and multiplication in grammar school, you had to go through careful consecutive steps on paper to get your answers. As time went on, a lot of those steps were condensed or done in your head. It became easy and self-evident.

   To teach the skill, it is necessary to break that skill back down into those steps. To be sure (1) that the operation is presented in logical steps the students can follow, (2) that all steps are presented, (3) that key points are highlighted, (4) that the safety practices central to the successful performance of the operation are not overlooked, and (5) that you will have all tools, supplies, equipment, and visuals necessary to present that demonstration, you need to prepare a lesson plan.

3. Practice is an excellent technique for (1) making you more confident in your ability to present the demonstration, (2) giving a little polish to the demonstration, (3) catching errors or potential problem areas, and (4) checking to see if **all** steps have been included and **all** necessary equipment and materials are available and in good condition.

4. It is not a good idea to present more than one way to perform the manipulative skill. Mastering all the steps involved in one method is possible. Trying to master two or more methods for performing a brand new skill can be confusing. It is far better to limit the amount of new information you expect students to absorb at one time. If it is important for students to know how to perform the skill using more than one method, these demonstrations should be presented separately.

5. During the demonstration, you can get feedback as to whether or not the students are following and understanding the procedure by asking key questions. These questions should be prepared ahead of time to ensure that you will get feedback at key points throughout the demonstration.

   Another source of feedback is available from students' nonverbal responses. If a student is daydreaming or has a perplexed look on his/her face, then you are getting very real feedback that the student is not following the demonstration.

6. To summarize, the teacher can merely restate the steps and key points, or run through the demonstration again briefly. However, it is preferable to involve students in the summarization. This can be done by having students restate the steps and key points, or by asking key questions.

   One good method for summarizing, involving students, reinforcing the learning, and getting feedback all at the same time is to follow your demonstration by (1) having a student perform the operation while the teacher explains the procedure, and then (2) having another student perform and explain the operation unaided, but under teacher supervision.

LEVEL OF PERFORMANCE: Your completed Self-Check should have covered the same **major** points as the model responses. If you missed some points or have questions about any additional points you made, review the material in the information sheet, Demonstrating a Manipulative Skill, pp. 6–11, or check with your resource person if necessary.

NOTES

Learning Experience II

OVERVIEW

Enabling Objective	In a simulated classroom or laboratory situation, demonstrate a manipulative skill.
Activity	You will be selecting a student performance objective in your occupational specialty that lends itself to the demonstration of a manipulative skill.
Activity	You will be selecting, modifying, or developing a lesson plan designed to achieve that objective using a manipulative skill demonstration.
Optional Feedback	You may wish to have your resource person review the adequacy of your plan.
Activity	You will be selecting, obtaining, or preparing the materials needed for your demonstration.
Activity	You will be presenting the lesson to a group of peers, or to your resource person.

Optional Activity

You may wish to record your demonstration on videotape for self-evaluation purposes.

Feedback

Your competency in demonstrating a manipulative skill will be evaluated by your peers, or by your resource person, using the Lesson Presentation Checklist, pp. 21–32.

Optional Feedback

If you videotaped your demonstration, you may wish to evaluate your own performance, using the Lesson Presentation Checklist, pp. 21–32.

Activity

Select a student performance objective in your occupational specialty which could be achieved, at least partially, by a manipulative skill demonstration. (In a real world situation, you start with an objective and then select the most appropriate materials and/or teaching methods. In this practice situation, however, you need to select an objective that lends itself to demonstrating a manipulative skill.)

Activity

Prepare a detailed lesson plan which includes an explanation of how the manipulative skill will be demonstrated. Instead of developing a lesson plan, you may select a lesson plan that you have developed previously, and adapt that plan so that it includes a manipulative skill demonstration.

Optional Feedback

You may wish to have your resource person review the adequacy of your plan. He/she could use the Teacher Performance Assessment Form in Module B-4, *Develop a Lesson Plan*, as a guide.

Activity

Based on your lesson plan, select, obtain, or prepare the materials and equipment you will need to make your demonstration.

Activity

In a simulated classroom or laboratory situation, present your lesson to a group of one to five peers. These peers will serve two functions: (1) they will role-play the students to whom you are presenting your lesson, and (2) they will evaluate your performance. If peers are not available to you, you may present your lesson to your resource person.

Optional Activity

If you wish to self-evaluate, you may record your performance on videotape so you may view your own demonstration at a later time.

Feedback

Multiple copies of the Lesson Presentation Checklist are provided in this learning experience. Give a copy to each peer, or to your resource person, before making your presentation in order to ensure that each knows what to look for in your lesson. However, indicate that during the lesson, all attention is to be directed toward you, and that the checklists are to be completed **after** the lesson is finished.

Optional Feedback

If you videotaped your lesson, you may want to self-evaluate using a copy of the Lesson Presentation Checklist.

LESSON PRESENTATION CHECKLIST

Directions: Place an X in the NO, PARTIAL, or FULL box to indicate that each of the following performance components was not accomplished, partially accomplished, or fully accomplished. If, because of special circumstances, a performance component was not applicable, or impossible to execute, place an X in the N/A box.

Name ____________________

Date ____________________

Resource Person ____________________

	LEVEL OF PERFORMANCE			
	N/A	No	Partial	Full
1. The physical environment was reasonably comfortable	☐	☐	☐	☐
2. The physical setting for the demonstration was as close to actual conditions on the job as possible	☐	☐	☐	☐
3. All necessary tools, materials, supplies, and visuals were organized and at hand when the teacher needed them	☐	☐	☐	☐
4. All tools, materials, supplies, and visuals were in good condition	☐	☐	☐	☐
5. The teacher introduced the demonstration with explanations of: a. what was going to be demonstrated	☐	☐	☐	☐
b. how it fit in with what the class already knew or had experienced	☐	☐	☐	☐
c. how it fit in with future activities	☐	☐	☐	☐
6. The teacher defined any new terms which would be encountered during the demonstration	☐	☐	☐	☐
7. The teacher motivated the class to want to learn the new skill	☐	☐	☐	☐
8. Each step necessary to the operation was demonstrated	☐	☐	☐	☐
9. Each step was explained as it was demonstrated	☐	☐	☐	☐
10. The steps were presented in a logical order	☐	☐	☐	☐
11. Key points or specific techniques essential to performing each step were explained	☐	☐	☐	☐
12. Safety practices specific to the operation were covered	☐	☐	☐	☐
13. If a step involved very small parts or intricate processes, the teacher used visuals or models to clarify the step	☐	☐	☐	☐
14. If a step was normally time-consuming (i.e., "refrigerate batter overnight"), the teacher had completed the step ahead of time	☐	☐	☐	☐
15. The procedure followed for the operation was the one most commonly used in the field	☐	☐	☐	☐

	N/A	No	Partial	Full
16. The steps were presented slowly enough that students did not miss key points	☐	☐	☐	☐
17. Every movement in the demonstration was clearly visible	☐	☐	☐	☐
18. If direction of movement was of special importance, students were positioned accordingly	☐	☐	☐	☐
19. The teacher could be clearly heard	☐	☐	☐	☐
20. The teacher talked to the students, and not to the materials	☐	☐	☐	☐
21. The teacher performed the operation with ease	☐	☐	☐	☐
22. The teacher set up standards of workmanship by doing a good thorough job	☐	☐	☐	☐
23. The teacher encouraged questions	☐	☐	☐	☐
24. The teacher asked key questions throughout to ensure that the students understood the demonstration	☐	☐	☐	☐
25. The teacher included some activity to summarize the steps and key points	☐	☐	☐	☐
26. The scope of the demonstration was sufficiently limited that students could absorb it all	☐	☐	☐	☐

LEVEL OF PERFORMANCE: All items must receive FULL or N/A responses. If any item receives a NO, or PARTIAL response, the teacher and resource person should meet to determine what additional activities the teacher needs to complete in order to reach competency in the weak area(s).

LESSON PRESENTATION CHECKLIST

Directions: Place an X in the NO, PARTIAL, or FULL box to indicate that each of the following performance components was not accomplished, partially accomplished, or fully accomplished. If, because of special circumstances, a performance component was not applicable, or impossible to execute, place an X in the N/A box.

Name ____________________

Date ____________________

Resource Person ____________________

LEVEL OF PERFORMANCE

	N/A	No	Partial	Full
1. The physical environment was reasonably comfortable	☐	☐	☐	☐
2. The physical setting for the demonstration was as close to actual conditions on the job as possible	☐	☐	☐	☐
3. All necessary tools, materials, supplies, and visuals were organized and at hand when the teacher needed them	☐	☐	☐	☐
4. All tools, materials, supplies, and visuals were in good condition	☐	☐	☐	☐
5. The teacher introduced the demonstration with explanations of:				
a. what was going to be demonstrated	☐	☐	☐	☐
b. how it fit in with what the class already knew or had experienced	☐	☐	☐	☐
c. how it fit in with future activities	☐	☐	☐	☐
6. The teacher defined any new terms which would be encountered during the demonstration	☐	☐	☐	☐
7. The teacher motivated the class to want to learn the new skill	☐	☐	☐	☐
8. Each step necessary to the operation was demonstrated	☐	☐	☐	☐
9. Each step was explained as it was demonstrated	☐	☐	☐	☐
10. The steps were presented in a logical order	☐	☐	☐	☐
11. Key points or specific techniques essential to performing each step were explained	☐	☐	☐	☐
12. Safety practices specific to the operation were covered	☐	☐	☐	☐
13. If a step involved very small parts or intricate processes, the teacher used visuals or models to clarify the step	☐	☐	☐	☐
14. If a step was normally time-consuming (i.e., "refrigerate batter overnight"), the teacher had completed the step ahead of time	☐	☐	☐	☐
15. The procedure followed for the operation was the one most commonly used in the field	☐	☐	☐	☐

	N/A	No	Partial	Full
16. The steps were presented slowly enough that students did not miss key points	☐	☐	☐	☐
17. Every movement in the demonstration was clearly visible	☐	☐	☐	☐
18. If direction of movement was of special importance, students were positioned accordingly	☐	☐	☐	☐
19. The teacher could be clearly heard	☐	☐	☐	☐
20. The teacher talked to the students, and not to the materials	☐	☐	☐	☐
21. The teacher performed the operation with ease	☐	☐	☐	☐
22. The teacher set up standards of workmanship by doing a good thorough job	☐	☐	☐	☐
23. The teacher encouraged questions	☐	☐	☐	☐
24. The teacher asked key questions throughout to ensure that the students understood the demonstration	☐	☐	☐	☐
25. The teacher included some activity to summarize the steps and key points	☐	☐	☐	☐
26. The scope of the demonstration was sufficiently limited that students could absorb it all	☐	☐	☐	☐

LEVEL OF PERFORMANCE: All items must receive FULL or N/A responses. If any item receives a NO, or PARTIAL response, the teacher and resource person should meet to determine what additional activities the teacher needs to complete in order to reach competency in the weak area(s).

LESSON PRESENTATION CHECKLIST

Directions: Place an X in the NO, PARTIAL, or FULL box to indicate that each of the following performance components was not accomplished, partially accomplished, or fully accomplished. If, because of special circumstances, a performance component was not applicable, or impossible to execute, place an X in the N/A box.

Name ______________________

Date ______________________

Resource Person ______________________

LEVEL OF PERFORMANCE

	N/A	No	Partial	Full
1. The physical environment was reasonably comfortable	☐	☐	☐	☐
2. The physical setting for the demonstration was as close to actual conditions on the job as possible	☐	☐	☐	☐
3. All necessary tools, materials, supplies, and visuals were organized and at hand when the teacher needed them	☐	☐	☐	☐
4. All tools, materials, supplies, and visuals were in good condition	☐	☐	☐	☐
5. The teacher introduced the demonstration with explanations of:				
a. what was going to be demonstrated	☐	☐	☐	☐
b. how it fit in with what the class already knew or had experienced	☐	☐	☐	☐
c. how it fit in with future activities	☐	☐	☐	☐
6. The teacher defined any new terms which would be encountered during the demonstration	☐	☐	☐	☐
7. The teacher motivated the class to want to learn the new skill	☐	☐	☐	☐
8. Each step necessary to the operation was demonstrated	☐	☐	☐	☐
9. Each step was explained as it was demonstrated	☐	☐	☐	☐
10. The steps were presented in a logical order	☐	☐	☐	☐
11. Key points or specific techniques essential to performing each step were explained	☐	☐	☐	☐
12. Safety practices specific to the operation were covered	☐	☐	☐	☐
13. If a step involved very small parts or intricate processes, the teacher used visuals or models to clarify the step	☐	☐	☐	☐
14. If a step was normally time-consuming (i.e., "refrigerate batter overnight"), the teacher had completed the step ahead of time	☐	☐	☐	☐
15. The procedure followed for the operation was the one most commonly used in the field	☐	☐	☐	☐

	N/A	No	Partial	Full
16. The steps were presented slowly enough that students did not miss key points	☐	☐	☐	☐
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19. The teacher could be clearly heard	☐	☐	☐	☐
20. The teacher talked to the students, and not to the materials	☐	☐	☐	☐
21. The teacher performed the operation with ease	☐	☐	☐	☐
22. The teacher set up standards of workmanship by doing a good thorough job	☐	☐	☐	☐
23. The teacher encouraged questions	☐	☐	☐	☐
24. The teacher asked key questions throughout to ensure that the students understood the demonstration	☐	☐	☐	☐
25. The teacher included some activity to summarize the steps and key points	☐	☐	☐	☐
26. The scope of the demonstration was sufficiently limited that students could absorb it all	☐	☐	☐	☐

LEVEL OF PERFORMANCE: All items must receive FULL or N/A responses. If any item receives a NO, or PARTIAL response, the teacher and resource person should meet to determine what additional activities the teacher needs to complete in order to reach competency in the weak area(s).

LESSON PRESENTATION CHECKLIST

Directions: Place an X in the NO, PARTIAL, or FULL box to indicate that each of the following performance components was not accomplished, partially accomplished, or fully accomplished. If, because of special circumstances, a performance component was not applicable, or impossible to execute, place an X in the N/A box.

Name

Date

Resource Person

LEVEL OF PERFORMANCE

	N/A	No	Partial	Full
1. The physical environment was reasonably comfortable	☐	☐	☐	☐
2. The physical setting for the demonstration was as close to actual conditions on the job as possible	☐	☐	☐	☐
3. All necessary tools, materials, supplies, and visuals were organized and at hand when the teacher needed them	☐	☐	☐	☐
4. All tools, materials, supplies, and visuals were in good condition	☐	☐	☐	☐
5. The teacher introduced the demonstration with explanations of: a. what was going to be demonstrated	☐	☐	☐	☐
b. how it fit in with what the class already knew or had experienced	☐	☐	☐	☐
c. how it fit in with future activities	☐	☐	☐	☐
6. The teacher defined any new terms which would be encountered during the demonstration	☐	☐	☐	☐
7. The teacher motivated the class to want to learn the new skill	☐	☐	☐	☐
8. Each step necessary to the operation was demonstrated	☐	☐	☐	☐
9. Each step was explained as it was demonstrated	☐	☐	☐	☐
10. The steps were presented in a logical order	☐	☐	☐	☐
11. Key points or specific techniques essential to performing each step were explained	☐	☐	☐	☐
12. Safety practices specific to the operation were covered	☐	☐	☐	☐
13. If a step involved very small parts or intricate processes, the teacher used visuals or models to clarify the step	☐	☐	☐	☐
14. If a step was normally time-consuming (i.e., "refrigerate batter overnight"), the teacher had completed the step ahead of time	☐	☐	☐	☐
15. The procedure followed for the operation was the one most commonly used in the field	☐	☐	☐	☐

	N/A	No	Partial	Full
16. The steps were presented slowly enough that students did not miss key points	☐	☐	☐	☐
17. Every movement in the demonstration was clearly visible	☐	☐	☐	☐
18. If direction of movement was of special importance, students were positioned accordingly	☐	☐	☐	☐
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20. The teacher talked to the students, and not to the materials	☐	☐	☐	☐
21. The teacher performed the operation with ease	☐	☐	☐	☐
22. The teacher set up standards of workmanship by doing a good thorough job	☐	☐	☐	☐
23. The teacher encouraged questions	☐	☐	☐	☐
24. The teacher asked key questions throughout to ensure that the students understood the demonstration	☐	☐	☐	☐
25. The teacher included some activity to summarize the steps and key points	☐	☐	☐	☐
26. The scope of the demonstration was sufficiently limited that students could absorb it all	☐	☐	☐	☐

LEVEL OF PERFORMANCE: All items must receive FULL or N/A responses. If any item receives a NO, or PARTIAL response, the teacher and resource person should meet to determine what additional activities the teacher needs to complete in order to reach competency in the weak area(s).

LESSON PRESENTATION CHECKLIST

Directions: Place an X in the NO, PARTIAL, or FULL box to indicate that each of the following performance components was not accomplished, partially accomplished, or fully accomplished. If, because of special circumstances, a performance component was not applicable, or impossible to execute, place an X in the N/A box.

Name ____________________

Date ____________________

Resource Person ____________________

LEVEL OF PERFORMANCE

	N/A	No	Partial	Full
1. The physical environment was reasonably comfortable	☐	☐	☐	☐
2. The physical setting for the demonstration was as close to actual conditions on the job as possible	☐	☐	☐	☐
3. All necessary tools, materials, supplies, and visuals were organized and at hand when the teacher needed them	☐	☐	☐	☐
4. All tools, materials, supplies, and visuals were in good condition	☐	☐	☐	☐
5. The teacher introduced the demonstration with explanations of:				
a. what was going to be demonstrated	☐	☐	☐	☐
b. how it fit in with what the class already knew or had experienced	☐	☐	☐	☐
c. how it fit in with future activities	☐	☐	☐	☐
6. The teacher defined any new terms which would be encountered during the demonstration	☐	☐	☐	☐
7. The teacher motivated the class to want to learn the new skill	☐	☐	☐	☐
8. Each step necessary to the operation was demonstrated	☐	☐	☐	☐
9. Each step was explained as it was demonstrated	☐	☐	☐	☐
10. The steps were presented in a logical order	☐	☐	☐	☐
11. Key points or specific techniques essential to performing each step were explained	☐	☐	☐	☐
12. Safety practices specific to the operation were covered	☐	☐	☐	☐
13. If a step involved very small parts or intricate processes, the teacher used visuals or models to clarify the step	☐	☐	☐	☐
14. If a step was normally time-consuming (i.e., "refrigerate batter overnight"), the teacher had completed the step ahead of time	☐	☐	☐	☐
15. The procedure followed for the operation was the one most commonly used in the field	☐	☐	☐	☐

	N/A	No	Partial	Full
16. The steps were presented slowly enough that students did not miss key points	☐	☐	☐	☐
17. Every movement in the demonstration was clearly visible	☐	☐	☐	☐
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21. The teacher performed the operation with ease	☐	☐	☐	☐
22. The teacher set up standards of workmanship by doing a good thorough job	☐	☐	☐	☐
23. The teacher encouraged questions	☐	☐	☐	☐
24. The teacher asked key questions throughout to ensure that the students understood the demonstration	☐	☐	☐	☐
25. The teacher included some activity to summarize the steps and key points	☐	☐	☐	☐
26. The scope of the demonstration was sufficiently limited that students could absorb it all	☐	☐	☐	☐

LEVEL OF PERFORMANCE: All items must receive FULL or N/A responses. If any item receives a NO, or PARTIAL response, the teacher and resource person should meet to determine what additional activities the teacher needs to complete in order to reach competency in the weak area(s).

LESSON PRESENTATION CHECKLIST

Directions: Place an X in the NO, PARTIAL, or FULL box to indicate that each of the following performance components was not accomplished, partially accomplished, or fully accomplished. If, because of special circumstances, a performance component was not applicable, or impossible to execute, place an X in the N/A box.

Name ____________________

Date ____________________

Resource Person ____________________

LEVEL OF PERFORMANCE

	N/A	No	Partial	Full
1. The physical environment was reasonably comfortable	☐	☐	☐	☐
2. The physical setting for the demonstration was as close to actual conditions on the job as possible	☐	☐	☐	☐
3. All necessary tools, materials, supplies, and visuals were organized and at hand when the teacher needed them	☐	☐	☐	☐
4. All tools, materials, supplies, and visuals were in good condition	☐	☐	☐	☐
5. The teacher introduced the demonstration with explanations of:				
a. what was going to be demonstrated	☐	☐	☐	☐
b. how it fit in with what the class already knew or had experienced	☐	☐	☐	☐
c. how it fit in with future activities	☐	☐	☐	☐
6. The teacher defined any new terms which would be encountered during the demonstration	☐	☐	☐	☐
7. The teacher motivated the class to want to learn the new skill	☐	☐	☐	☐
8. Each step necessary to the operation was demonstrated	☐	☐	☐	☐
9. Each step was explained as it was demonstrated	☐	☐	☐	☐
10. The steps were presented in a logical order	☐	☐	☐	☐
11. Key points or specific techniques essential to performing each step were explained	☐	☐	☐	☐
12. Safety practices specific to the operation were covered	☐	☐	☐	☐
13. If a step involved very small parts or intricate processes, the teacher used visuals or models to clarify the step	☐	☐	☐	☐
14. If a step was normally time-consuming (i.e., "refrigerate batter overnight"), the teacher had completed the step ahead of time	☐	☐	☐	☐
15. The procedure followed for the operation was the one most commonly used in the field	☐	☐	☐	☐

	N/A	No	Partial	Full
16. The steps were presented slowly enough that students did not miss key points	☐	☐	☐	☐
17. Every movement in the demonstration was clearly visible	☐	☐	☐	☐
18. If direction of movement was of special importance, students were positioned accordingly	☐	☐	☐	☐
19. The teacher could be clearly heard	☐	☐	☐	☐
20. The teacher talked to the students, and not to the materials	☐	☐	☐	☐
21. The teacher performed the operation with ease	☐	☐	☐	☐
22. The teacher set up standards of workmanship by doing a good thorough job	☐	☐	☐	☐
23. The teacher encouraged questions	☐	☐	☐	☐
24. The teacher asked key questions throughout to ensure that the students understood the demonstration	☐	☐	☐	☐
25. The teacher included some activity to summarize the steps and key points	☐	☐	☐	☐
26. The scope of the demonstration was sufficiently limited that students could absorb it all	☐	☐	☐	☐

LEVEL OF PERFORMANCE: All items must receive FULL or N/A responses. If any item receives a NO, or PARTIAL response, the teacher and resource person should meet to determine what additional activities the teacher needs to complete in order to reach competency in the weak area(s).

Learning Experience III

FINAL EXPERIENCE

Terminal Objective

In an **actual school situation,*** demonstrate a manipulative skill.

Activity

As you plan your lessons, decide when demonstrating a manipulative skill could be used effectively to aid you in meeting the lesson objectives. Based on that decision, demonstrate a manipulative skill. This will include—

- selecting, modifying, or developing a lesson plan which includes detailed plans for presenting such a demonstration
- locating and/or developing all necessary equipment and materials
- preparing the physical setting for the demonstration
- presenting the lesson to the class

NOTE: Your resource person may want you to submit your written lesson plan to him/her for evaluation before you present your lesson. It may be helpful for your resource person to use the TPAF from Module B–4, *Develop a Lesson Plan*, to guide his/her evaluation.

Arrange in advance to have your resource person observe your lesson presentation.

Feedback

Your total competency will be assessed by your resource person, using the Teacher Performance Assessment Form, pp. 35–36.

Based upon the criteria specified in this assessment instrument your resource person will determine whether you are competent in demonstrating a manipulative skill.

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*For a definition of "actual school situation," see the inside back cover.

NOTES

TEACHER PERFORMANCE ASSESSMENT FORM

Demonstrate a Manipulative Skill (C–16)

Name

Date

Resource Person

Directions: Indicate the level of the teacher's accomplishment by placing an X in the appropriate box under the LEVEL OF PERFORMANCE heading. If, because of special circumstances, a performance component was not applicable, or impossible to execute, place an X in the N/A box.

	LEVEL OF PERFORMANCE					
	N/A	None	Poor	Fair	Good	Excellent
1. The physical environment was reasonably comfortable	☐	☐	☐	☐	☐	☐
2. The physical setting for the demonstration was as close to actual conditions on the job as possible	☐	☐	☐	☐	☐	☐
3. All necessary tools, materials, supplies, and visuals were organized and at hand when the teacher needed them	☐	☐	☐	☐	☐	☐
4. All tools, materials, supplies, and visuals were in good condition	☐	☐	☐	☐	☐	☐
5. The teacher introduced the demonstration with explanations of:						
a. what was going to be demonstrated	☐	☐	☐	☐	☐	☐
b. how it fit in with what the class already knew or had experienced	☐	☐	☐	☐	☐	☐
c. how it fit in with future activities	☐	☐	☐	☐	☐	☐
6. The teacher defined any new terms which would be encountered during the demonstration	☐	☐	☐	☐	☐	☐
7. The teacher motivated the class to want to learn the new skill	☐	☐	☐	☐	☐	☐
8. Each step necessary to the operation was demonstrated	☐	☐	☐	☐	☐	☐
9. Each step was explained as it was demonstrated	☐	☐	☐	☐	☐	☐
10. The steps were presented in a logical order	☐	☐	☐	☐	☐	☐
11. Key points or specific techniques essential to performing each step were explained	☐	☐	☐	☐	☐	☐
12. Safety practices specific to the operation were covered.	☐	☐	☐	☐	☐	☐
13. If a step involved very small parts or intricate processes, the teacher used visuals or models to clarify the step	☐	☐	☐	☐	☐	☐

	N/A	None	Poor	Fair	Good	Excellent
14. If a step was normally time-consuming (i.e., "refrigerate batter overnight"), the teacher had completed the step ahead of time	☐	☐	☐	☐	☐	☐
15. The procedure followed for the operation was the one most commonly used in the field	☐	☐	☐	☐	☐	☐
16. The steps were presented slowly enough that students did not miss key points	☐	☐	☐	☐	☐	☐
17. Every movement in the demonstration was clearly visible	☐	☐	☐	☐	☐	☐
18. If direction of movement was of special importance, students were positioned accordingly	☐	☐	☐	☐	☐	☐
19. The teacher could be clearly heard	☐	☐	☐	☐	☐	☐
20. The teacher talked to the students, and not to the materials	☐	☐	☐	☐	☐	☐
21. The teacher performed the operation with ease	☐	☐	☐	☐	☐	☐
22. The teacher set up standards of workmanship by doing a good thorough job	☐	☐	☐	☐	☐	☐
23. The teacher encouraged questions	☐	☐	☐	☐	☐	☐
24. The teacher asked key questions throughout to ensure that the students understood the demonstration	☐	☐	☐	☐	☐	☐
25. The teacher included some activity to summarize the steps and key points	☐	☐	☐	☐	☐	☐
26. The scope of the demonstration was sufficiently limited that students could absorb it all	☐	☐	☐	☐	☐	☐

LEVEL OF PERFORMANCE: All items must receive N/A, GOOD, or EXCELLENT responses. If any item receives a NONE, POOR, or FAIR response, the teacher and resource person should meet to determine what additional activities the teacher needs to complete in order to reach competency in the weak area(s).

ABOUT USING THE CENTER'S PBTE MODULES

Organization

Each module is designed to help you gain competency in a particular skill area considered important to teaching success. A module is made up of a series of learning experiences, some providing background information, some providing practice experiences, and others combining these two functions. Completing these experiences should **enable** you to achieve the **terminal** objective in the final learning experience. The final experience in each module always requires you to demonstrate the skill in an actual school situation when you are an intern, a student teacher, or an inservice teacher.

Procedures

Modules are designed to allow you to individualize your teacher education program. You need to take only those modules covering skills which you do not already possess. Similarly, you need not complete any learning experience within a module if you already have the skill needed to complete it. Therefore, before taking any module, you should carefully review (1) the Introduction, (2) the Objectives listed on p. 4, (3) the Overviews preceding each learning experience, and (4) the Final Experience. After comparing your present needs and competencies with the information you have read in these sections, you should be ready to make one of the following decisions:

- that you do not have the competencies indicated, and should complete the entire module
- that you are competent in one or more of the enabling objectives leading to the final learning experience, and thus can omit that (those) learning experience(s)
- that you are already competent in this area, and ready to complete the final learning experience in order to "test out"
- that the module is inappropriate to your needs at this time

When you are ready to take the final learning experience **and** have access to an actual school situation, make the necessary arrangements with your resource person. If you do not complete the final experience successfully, meet with your resource person and arrange (1) to repeat the experience, or (2) complete (or review) previous sections of the module or other related activities suggested by your resource person before attempting to repeat the final experience.

Options for recycling are also available in each of the learning experiences preceding the final experience. Any time you do not meet the minimum level of performance required to meet an objective, you and your resource person may meet to select activities to help you reach competency. This could involve (1) completing parts of the module previously skipped; (2) repeating activities; (3) reading supplementary resources or completing additional activities suggested by the resource person; (4) designing your own learning experience; or (5) completing some other activity suggested by you or your resource person.

Terminology

Actual School Situation . . . refers to a situation in which you are actually working with, and responsible for, secondary or post-secondary vocational students in a real school. An intern, a student teacher, or an inservice teacher would be functioning in an actual school situation. If you do **not** have access to an actual school situation when you are taking the module, you can complete the module **up to** the final learning experience. You would then do the final learning experience later; i.e., when you have access to an actual school situation.

Alternate Activity or Feedback . . . refers to an item or feedback device which may **substitute** for required items which, due to special circumstances, you are unable to complete.

Occupational Specialty . . . refers to a specific area of preparation within a vocational service area (e.g., the service area Trade and Industrial Education includes occupational specialties such as automobile mechanics, welding, and electricity).

Optional Activity or Feedback . . . refers to an item which is not required, but which is designed to **supplement** and enrich the required items in a learning experience.

Resource Person . . . refers to the person in charge of your educational program; the professor, instructor, administrator, supervisor, or cooperating/supervising/classroom teacher who is guiding you in taking this module.

Student . . . refers to the person who is enrolled and receiving instruction in a secondary or post-secondary educational institution.

Vocational Service Area . . . refers to a major vocational field: agricultural education, business and office education, distributive education, health occupations education, home economics education, industrial arts education, technical education, or trade and industrial education.

You or the Teacher . . . refers to the person who is taking the module.

Levels of Performance for Final Assessment

N/A . . . The criterion was not met because it was **not applicable** to the situation.
None . . . **No attempt** was made to meet the criterion, although it was relevent.
Poor . . . The teacher is unable to perform this skill or has only **very limited ability** to perform it.
Fair . . . The teacher is unable to perform this skill in an acceptable manner, but has **some ability** to perform it.
Good . . . The teacher is able to perform this skill in an **effective** manner.
Excellent . . . The teacher is able to perform this skill in a **very effective** manner.

Titles of The Center's
Performance-Based Teacher Education Modules

Category A: Program Planning, Development, and Evaluation

A-1 Prepare for a Community Survey
A-2 Conduct a Community Survey
A-3 Report the Findings of a Community Survey
A-4 Organize an Occupational Advisory Committee
A-5 Maintain an Occupational Advisory Committee
A-6 Develop Program Goals and Objectives
A-7 Conduct an Occupational Analysis
A-8 Develop a Course of Study
A-9 Develop Long-Range Program Plans
A-10 Conduct a Student Follow-Up Study
A-11 Evaluate Your Vocational Program

Category B: Instructional Planning

B-1 Determine Needs and Interests of Students
B-2 Develop Student Performance Objectives
B-3 Develop a Unit of Instruction
B-4 Develop a Lesson Plan
B-5 Select Student Instructional Materials
B-6 Prepare Teacher-Made Instructional Materials

Category C: Instructional Execution

C-1 Direct Field Trips
C-2 Conduct Group Discussions, Panel Discussions, and Symposiums
C-3 Employ Brainstorming, Buzz Group, and Question Box Techniques
C-4 Direct Students in Instructing Other Students
C-5 Employ Simulation Techniques
C-6 Guide Student Study
C-7 Direct Student Laboratory Experience
C-8 Direct Students in Applying Problem-Solving Techniques
C-9 Employ the Project Method
C-10 Introduce a Lesson
C-11 Summarize a Lesson
C-12 Employ Oral Questioning Techniques
C-13 Employ Reinforcement Techniques
C-14 Provide Instruction for Slower and More Capable Learners
C-15 Present an Illustrated Talk
C-16 Demonstrate a Manipulative Skill
C-17 Demonstrate a Concept or Principle
C-18 Individualize Instruction
C-19 Employ the Team Teaching Approach
C-20 Use Subject Matter Experts to Present Information
C-21 Prepare Bulletin Boards and Exhibits
C-22 Present Information with Models, Real Objects, and Flannel Boards
C-23 Present Information with Overhead and Opaque Materials
C-24 Present Information with Filmstrips and Slides
C-25 Present Information with Films
C-26 Present Information with Audio Recordings
C-27 Present Information with Televised and Videotaped Materials
C-28 Employ Programmed Instruction
C-29 Present Information with the Chalkboard and Flip Chart

Category D: Instructional Evaluation

D-1 Establish Student Performance Criteria
D-2 Assess Student Performance: Knowledge
D-3 Assess Student Performance: Attitudes
D-4 Assess Student Performance: Skills
D-5 Determine Student Grades
D-6 Evaluate Your Instructional Effectiveness

Category E: Instructional Management

E-1 Project Instructional Resource Needs
E-2 Manage Your Budgeting and Reporting Responsibilities
E-3 Arrange for Improvement of Your Vocational Facilities
E-4 Maintain a Filing System
E-5 Provide for Student Safety
E-6 Provide for the First Aid Needs of Students
E-7 Assist Students in Developing Self-Discipline
E-8 Organize the Vocational Laboratory
E-9 Manage the Vocational Laboratory

Category F: Guidance

F-1 Gather Student Data Using Formal Data-Collection Techniques
F-2 Gather Student Data Through Personal Contacts
F-3 Use Conferences to Help Meet Student Needs
F-4 Provide Information on Educational and Career Opportunities
F-5 Assist Students in Applying for Employment or Further Education

Category G: School-Community Relations

G-1 Develop a School-Community Relations Plan for Your Vocational Program
G-2 Give Presentations to Promote Your Vocational Program
G-3 Develop Brochures to Promote Your Vocational Program
G-4 Prepare Displays to Promote Your Vocational Program
G-5 Prepare News Releases and Articles Concerning Your Vocational Program
G-6 Arrange for Television and Radio Presentations Concerning Your Vocational Program
G-7 Conduct an Open House
G-8 Work with Members of the Community
G-9 Work with State and Local Educators
G-10 Obtain Feedback about Your Vocational Program

Category H: Student Vocational Organization

H-1 Develop a Personal Philosophy Concerning Student Vocational Organizations
H-2 Establish a Student Vocational Organization
H-3 Prepare Student Vocational Organization Members for Leadership Roles
H-4 Assist Student Vocational Organization Members in Developing and Financing a Yearly Program of Activities
H-5 Supervise Activities of the Student Vocational Organization
H-6 Guide Participation in Student Vocational Organization Contests

Category I: Professional Role and Development

I-1 Keep Up-to-Date Professionally
I-2 Serve Your Teaching Profession
I-3 Develop an Active Personal Philosophy of Education
I-4 Serve the School and Community
I-5 Obtain a Suitable Teaching Position
I-6 Provide Laboratory Experiences for Prospective Teachers
I-7 Plan the Student Teaching Experience
I-8 Supervise Student Teachers

Category J: Coordination of Cooperative Education

J-1 Establish Guidelines for Your Cooperative Vocational Program
J-2 Manage the Attendance, Transfers, and Terminations of Co-Op Students
J-3 Enroll Students in Your Co-Op Program
J-4 Secure Training Stations for Your Co-Op Program
J-5 Place Co-Op Students on the Job
J-6 Develop the Training Ability of On-the-Job Instructors
J-7 Coordinate On-the-Job Instruction
J-8 Evaluate Co-Op Students' On-the-Job Performance
J-9 Prepare for Students' Related Instruction
J-10 Supervise an Employer-Employee Appreciation Event

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Student Guide to Using Performance-Based Teacher Education Materials
Resource Person Guide to Using Performance-Based Teacher Education Materials
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APPENDIX I

Module Titles and Associated Performance Elements for Each Version Produced

	PROTOTYPE MODULES (123)	PRELIMINARY TEST VERSION (118)	ADVANCED TEST VERSION (100)	PUBLISHED VERSION (100)
		Category A: Program Planning, Development, and Evaluation		
A-1	Pre-Plan a Community Survey	Pre-Plan a Community Survey	Plan a Community Survey	Prepare for a Community Survey
A-2	Involve Local and State Agencies in a Community Survey	Involve Local and State Agencies in a Community Survey	Conduct and Analyze Community Survey Data	Conduct a Community Survey
A-3	Develop Materials and Procedures for Conducting a Community Survey	Develop Materials and Procedures for Conducting a Community Survey	Report and Use the Findings of a Community Survey	Report the Findings of a Community Survey
A-4	Involve the Steering Committee and School Personnel in a Community Survey	Involve the Steering Committee and School Personnel in a Community Survey	Organize or Reorganize an Occupational Advisory Committee	Organize an Occupational Advisory Committee
A-5	Develop Public Awareness of a Community Survey	Develop Public Awareness of a Community Survey	Maintain an Occupational Advisory Committee	Maintain an Occupational Advisory Committee
A-6	Collect and Analyze Community Survey Data	Collect and Analyze Community Survey Data	Develop Vocational Education Program Goals and Objectives	Develop Program Goals and Objectives
A-7	Report Findings of a Community Survey	Report Findings of a Community Survey	Conduct an Occupational Analysis	Conduct an Occupational Analysis
A-8	Establish an Advisory Committee	Establish an Advisory Committee	Develop a Course of Study	Develop a Course of Study
A-9	Maintain an Advisory Committee	Maintain an Advisory Committee	Develop Long Range Plans for a Vocational Program	Develop Long Range Program Plans
A-10	Develop Vocational Education Program Offerings	Develop Vocational Education Program Offerings	Conduct a Student Follow-up Study	Conduct a Student Follow-Up Study
A-11	Analyze an Occupation	Analyze an Occupation	Evaluate Your Vocational Program	Evaluate Your Vocational Program
A-12	Write Student Performance Objectives for the Vocational Education Offerings	Write Student Performance Objectives for the Vocational Education Offering		
A-13	Develop Long Range Vocational Program Plans	Develop Long-Range Vocational Education Program Plans		

A-14	Conduct a Follow-Up Study	Conduct a Student Follow-Up Study		
A-15	Identify Needed Improvements Through Your Vocational Education Program Evaluation	Identify Needed Improvements Through Your Vocational Education Program Evaluation		

Associated Performance Elements

A-1	1, 2, 3	1, 2, 3	1-5, 8, 12	1-12, 14, 15
A-2	4, 6, 7, 8	4, 6, 7, 8	13, 16, 17	13, 16, 17
A-3	5, 12	5, 12	18, 19	18, 19
A-4	9, 10, 14, 15	9, 10, 14, 15	20-24	20-24
A-5	11, 13	11, 13	25-29	25-29
A-6	16, 17	16, 17, 31, 4.4	30, 31, 36	30, 31, 36, 52
A-7	18, 19, 31, 4.4	18, 19	32-35, 37	32-35
A-8	20-24	20-24	34-38	34-38
A-9	25-29	25-29	40-45	40-45
A-10	30, 34-38	30, 34-38	46-48	46-48
A-11	32, 33	32, 33	49-51	49-51
A-12	39	39		
A-13	40-45	40-45		
A-14	46-48	46-48		
A-15	49, 50, 51	49, 50, 51		

Category B: Instructional Planning

B-1	Sequence Student Performance Objectives for an Offering	Sequence Student Performance Objectives	Determine Needs and Interests of Students	Determine Needs and Interests of Students
B-2	Determine Needs and Interests of Student Enrollees	Determine Needs and Interests of Students	Write Student Performance Objectives	Develop Student Performance Objectives

B-3	Plan A Unit of Instruction	Plan a Unit of Instruction	Plan a Unit of Instruction	Develop a Unit of Instruction
B-4	Develop a Lesson Plan	Write a Lesson Plan	Write a Lesson Plan	Develop a Lesson Plan
B-5	Write a Lesson Plan		Select and Obtain Student Instructional Materials	Select Student Instructional Materials
B-6	Select and Obtain Student Instructional Materials	Select and Obtain Student Instructional Materials	Prepare Teacher-Made Instructional Materials	Prepare Teacher-Made Instructional Materials
B-7	Prepare Teacher Made Instructional Materials for a Lesson	Prepare Teacher Made Instructional Materials for a Lesson		

Associated Performance Elements

B-1	52-54	52-54	55	55
B-2	55	55	39, 54	39, 53, 54
B-3	56-61	56-61	56-61	56-61
B-4	62-68	62-69	62-69	62-69
B-5	69		70-72, 75	70-72, 75
B-6	70-72, 75	70-72, 75	73, 74, 76-78	73, 74, 76-78
B-7	73, 74, 76-78	73, 74, 76-78		

Category C:
Instructional Execution

C-1	Direct Students in Gathering Information from Sources in the Community	Conduct Group and Individual Field Trips	Conduct Individual and Group Field Trips	Direct Field Trips
C-2	Conduct Symposiums, Panels, and Group Discussions	Conduct Group Discussions, Panel Discussions, and Symposiums	Conduct Group Discussions, Panel Discussions, and Symposiums	Conduct Group Discussions, Panel Discussions, and Symposiums
C-3	Stimulate Learning through Brainstorming, Buzz Group and Question Box Techniques	Stimulate Learning Through Brainstorming, Buzz Group and Question Box Techniques	Stimulate Learning Through Brainstorming, Buzz Group and Question Box Techniques	Employ Brainstorming, Buzz Group, and Question Box Techniques
C-4	Direct Students in Instructing Other Students	Direct Students in Instructing Other Students	Direct Students in Instructing Other Students	Direct Students in Instructing Other Students
C-5	Employ Simulation and Role Playing Techniques	Employ the Techniques of Role Playing and Simulation	Employ the Techniques of Role Playing and Simulation	Employ Simulation Techniques

C-6	Direct Student Study	Direct Student Study	Direct Student Study	Guide Student Study
C-7	Direct Student Laboratory Experience	Direct Student Laboratory Experience	Direct Student Laboratory Experience	Direct Student Laboratory Experience
C-8	Direct Students in Applying Problem-Solving Techniques	Direct Students in Applying Problem-Solving Techniques	Direct Students in Applying Problem-Solving Techniques	Direct Students in Applying Problem-Solving Techniques
C-9	Direct Project Method Instruction	Direct the Project Method	Direct the Project Method	Employ the Project Method
C-10	Introduce a Lesson	Introduce a Lesson	Introduce a Lesson	Introduce a Lesson
C-11	Obtain Summary for a Lesson	Summarize a Lesson	Summarize a Lesson	Summarize a Lesson
C-12	Employ Oral Questioning Techniques	Employ Oral Questioning Techniques	Employ Oral Questioning Techniques	Employ Oral Questioning Techniques
C-13	Demonstrate the Reinforcement of Learning	Employ Reinforcement Techniques	Employ Reinforcement Techniques	Employ Reinforcement Techniques
C-14	Present Instruction to Slow and Fast Learners	Plan Instruction for Slower and More Capable Learners	Provide Instruction for Slower and More Capable Learners	Provide Instruction for Slower and More Capable Learners
C-15	Give a Lecture and a Talk	Present Information Through an Illustrated Talk	Present Information Through an Illustrated Talk	Present an Illustrated Talk
C-16	Demonstrate a Manipulative Skill	Demonstrate a Manipulative Skill	Demonstrate a Manipulative Skill	Demonstrate a Manipulative Skill
C-17	Demonstrate a Concept or Principle	Demonstrate a Concept or Principle	Demonstrate a Concept or Principle	Demonstrate a Concept or Principle
C-18	Direct Individualized Instruction	Direct Individualized Instruction	Direct Individualized Instruction	Individualize Instruction
C-19	Conduct Team Teaching	Conduct Team Teaching	Conduct Team Teaching	Employ the Team Teaching Approach
C-20	Present Information with the Assistance of a Resource Person	Present Information with the Assistance of a Subject Matter Expert	Present Information Using a Subject Matter Expert	Use Subject Matter Experts to Present Information
C-21	Illustrate with Bulletin Boards and Exhibits	Illustrate with Bulletin Boards and Exhibits	Illustrate with Bulletin Boards and Exhibits	Prepare Bulletin Boards and Exhibits
C-22	Illustrate with Models, Real Objects, and Flannel Board	Illustrate with Models, Real Objects and Flannel Boards	Illustrate with Models, Real Objects and Flannel Boards	Present Information with Models, Real Objects, and Flannel Boards

C-23	Present Information with an Overhead Projector or Opaque Projector	Present Information with Overhead and Opaque Materials	Present Information with Overhead and Opaque Materials	Present Information with Overhead and Opaque Materials
C-24	Illustrate with Filmstrips and Slides	Present Information with Filmstrips and Slides	Present Information with Filmstrips and Slides	Present Information with Filmstrips and Slides
C-25	Present Information with Films	Present Information with Films	Present Information with Films	Present Information with Films
C-26	Present Information with Audio Recordings	Present Information with Audio Recordings	Present Information with Audio Recordings	Present Information with Audio Recordings
C-27	Present Information with Television	Present Information with Televised and Videotaped Materials	Present Information with Televised and Videotaped Materials	Present Information with Televised and Videotaped Materials
C-28	Direct Programmed Instruction	Direct Programmed Instruction	Direct Programmed Instruction	Employ Programmed Instruction
C-29	Present Information with Chalkboard and Flip Chart	Present Information with the Chalkboard and Flip Chart	Present Information with the Chalkboard and Flip Chart	Present Information with the Chalkboard and Flip Chart

Associated Performance Elements

C-1	79, 80	79, 80	79	79, 80
C-2	81, 95, 96	81, 95, 96	81, 95, 96	81, 95, 96
C-3	82, 97, 98	82, 97, 98	82, 97, 98	82, 97, 98
C-4	83, 84	83, 84	83, 84	83, 84
C-5	85, 99	85, 99	85, 99	85, 99
C-6	86, 91, 92, 117	86, 91, 92, 117	86, 91, 92, 117	86, 91, 92, 117, 221
C-7	87, 93, 94	87, 93, 94	87, 93, 94	87, 93, 94
C-8	88, 89	88, 89	88, 89	88, 89
C-9	90	90	90	90
C-10	100	100	100	100
C-11	101	101	101	101
C-12	102	102	102	102
C-13	103, 105, 107, 109	103, 105, 107, 109	103, 105, 107, 109	103, 105, 107, 109
C-14	104, 106	104, 106	104, 106	104, 106

C-15	108, 112-114	108, 112-114	108, 112-114	108, 112-114
C-16	110	110	110	110
C-17	111	111	111	111
C-18	115	115	115	115, 143
C-19	116	116	116	116
C-20	118, 130	118, 130	118, 130	118, 130
C-21	119, 120	119, 120	119, 120	119, 120
C-22	121, 136	121, 136	121, 136	121, 136
C-23	122, 123	122, 123	122, 123	122, 123
C-24	124, 125	124, 125	124, 125	124, 125
C-25	126, 127	126, 127	126, 127	126, 127
C-26	128, 131	128, 131	128, 131	128, 131
C-27	129, 132	129, 132	129, 132	129, 132
C-28	133-135	133-135	133-135	133-135
C-29	137, 138	137, 138	137, 138	137, 138

Category D:
Instructional Evaluation

D-1	Establish Criteria for Evaluation of Student Performance in a Vocational Education Offering	Establish Criteria for Student Performance in a Vocational Education Program	Establish Criteria for Student Performance in a Vocational Education Program	Establish Student Performance Criteria
D-2	Assess Student Cognitive Performance	Assess Student Cognitive Performance	Assess Student Cognitive Performance	Assess Student Performance: Knowledge
D-3	Assess Student Affective Performance	Assess Student Affective Performance	Assess Student Affective Performance	Assess Student Performance: Attitudes
D-4	Assess Student Psychomotor Performance	Assess Student Psychomotor Performance	Assess Student Psychomotor Performance	Assess Student Performance: Skills
D-5	Determine Student Grades in a Vocational Offering	Determine Student Grades in a Vocational Offering	Determine Student Grades in a Vocational Program	Determine Student Grades
D-6	Evaluate Instructional Effectiveness	Evaluate Instructional Effectiveness	Evaluate Instructional Effectiveness	Evaluate Your Instructional Effectiveness

Associated Performance Elements

D-1	139	139	139	139
D-2	142, 149-153, 156-160	142, 149-153, 156-160	142, 149-153, 156-160	142, 149-153, 156-160
D-3	142, 149, 156, 158-160	142, 149, 156, 158-160	142, 149, 156, 158-160	142, 149, 156, 158-160
D-4	141, 142, 144-146, 157, 159, 160	141, 142, 144-146, 157, 159, 160	141, 142, 144-146, 154, 155, 157, 159, 160	141, 142, 144-146, 154, 155, 157, 159, 160
D-5	140, 147	140, 147	140, 147	140, 147
D-6	148, 161-164	148, 161-164	148, 161-164	148, 161-164

Category E:
Instructional Management

E-1	Project Instructional Resource Needs	Project Instructional Resource Needs	Project Instructional Resource Needs	Project Instructional Resource Needs
E-2	Prepare Vocational Budgets and Reports	Prepare Vocational Budgets and Reports	Prepare Vocational Budgets and Reports	Manage Your Budgeting and Reporting Responsibilities
E-3	Plan Additional Facilities for Program Expansion and Devise a System for Acquiring Supplies and Materials	Arrange for Expanding Facilities and for Receiving and Purchasing Special Items for the Vocational Program	Arrange for Expanding Facilities and for Purchasing Supplies for the Vocational Program	Arrange for Improvement of Your Vocational Facilities
E-4	Maintain a Filing System	Maintain a Filing System	Maintain a Filing System	Maintain a Filing System
E-5	Provide Approved Safety Apparel and Devices for Vocational Students Assigned to Hazardous Equipment	Provide for the Safety Needs of Vocational Students	Provide for the Safety Needs of Vocational Students	Provide for Student Safety
E-6	Establish a Procedure for Attending to First Aid Needs of Vocational Students	Provide for the First Aid Needs of Vocational Students	Provide for the First Aid Needs of Vocational Students	Provide for the First Aid Needs of Students
E-7	Assist Students in Exhibiting Self-Discipline	Assist Students in Developing Self-Discipline	Assist Students in Developing Self-Discipline	Assist Students in Developing Self-Discipline
E-8	Manage Equipment and Supplies in the Vocational Laboratory	Manage Equipment and Supplies in the Vocational Laboratory	Manage Equipment and Supplies in the Vocational Laboratory	Organize the Vocational Laboratory
E-9	Organize and Maintain the Vocational Laboratory	Organize and Maintain the Vocational Laboratory	Organize and Maintain the Vocational Laboratory	Manage the Vocational Laboratory

Associated Performance Elements

E-1	165-167	165-167	165-167	165-167
E-2	168-170, 172, 177	168-170, 172, 173, 177	168-170, 172, 173, 177	168-170, 172-175, 177
E-3	171, 173-175	171, 174, 175	171, 174, 175	171
E-4	176, 178-182	176, 178-182	176, 178-182	176, 178-182
E-5	183, 185	183, 185	183, 185	183, 185
E-6	184	184	184	184
E-7	186-191	186-191	186-191	186-191
E-8	192-195	192-195	194, 198, 199	194, 198, 199
E-9	196-201	196-201	192, 193, 195-197, 200, 201	192, 193, 195-197, 200, 201

Category F: Guidance

F-1	Assemble Student Data	Assemble Student Data	Select and Use Appropriate Student Data-Collection Sources and Techniques	Gather Student Data Using Formal Data-Collection Techniques
F-2	Relate to Students as Individuals	Relate to Students as Individuals	Gather Student Data through Personal Contacts	Gather Student Data through Personal Contacts
F-3	Aid Students in Developing Educational and Career Goals	Aid Students in Developing Educational and Career Goals	Use Conferences to Help Students Meet Personal, Educational and Vocational Needs	Use Conferences to Help Meet Student Needs
F-4	Conduct Individual and Group Conferences	Conduct Individual and Group Conferences	Plan and Conduct Classroom and Related Activities on Educational and Career Opportunities	Provide Information on Educational and Career Opportunities
F-5	Cooperate with Other Resource Persons in Meeting Student Needs	Cooperate with Colleagues and Outside Agencies in Meeting Student Needs	Assist Students in Applying for Employment or Further Education	Assist Students in Applying for Employment or Further Education
F-6	Assist Students in Applying for Jobs or Further Education	Assist Students in Applying for Employment or Further Education		

Associated Performance Elements

F-1	202-208	202-208	202-208, 222, 223, 228, 229	202-208, 212, 222, 223, 228, 229
F-2	209, 210, 212-216, 221	209, 210, 212-216, 221	209, 212, 214-216, 222, 226	209, 212, 214-216, 222, 226
F-3	211, 219, 220, 227-231	211, 219, 220, 227-231	210-212, 217-220, 222, 224, 225, 227	210-212, 217-220, 222, 224, 225, 227
F-4	217, 218	217, 218	212, 213, 222, 230, 231	212, 213, 222, 230, 231
F-5	222-226	222-226	212, 232-235	212, 232-235
F-6	232-235	232-235		

Category G:
School-Community Relations

G-1	Develop an Annual Plan for School-Community Relations	Develop a Plan for School-Community Relations	Develop a Plan for School-Community Relations	Develop a School-Community Relations Plan for Your Vocational Program
G-2	Give Presentations to Community Groups to Promote a Vocational Education Program	Give Presentations to School and Community Groups to Promote a Vocational Education Program	Give Presentations to School and Community Groups to Promote a Vocational Education Program	Give Presentations to Promote Your Vocational Program
G-3	Prepare and Distribute Brochures to Promote a Vocational Education Program	Provide Brochures to Inform the School and Community of the Vocational Education Program	Provide Brochures to Inform the School and Community about the Vocational Education Program	Develop Brochures to Promote Your Vocational Program
G-4	Plan, Develop, Install Displays to Promote a Vocational Education Program	Provide Displays and Exhibits in the School and Community on the Vocational Program	Provide Displays in the School and Community on the Vocational Program	Prepare Displays to Promote Your Vocational Program
G-5	Prepare and Get Published News Releases and Manuscripts to Promote a Vocational Education Program	Prepare News Releases and Manuscripts to Promote the Vocational Program	Prepare News Releases and Manuscripts to Promote the Vocational Program	Prepare News Releases and Articles Concerning Your Vocational Program
G-6	Plan, Develop and Present Television and Radio Programs to Promote a Vocational Education Program	Plan, Develop and Present Television and Radio Programs to Promote the Vocational Program	Plan, Develop and Present Television and Radio Programs to Promote the Vocational Program	Arrange for Television and Radio Presentations Concerning Your Vocational Program
G-7	Plan, Prepare and Conduct an Open House to Promote a Vocational Education Program	Conduct an Open House	Conduct an Open House	Conduct an Open House

G-8	Provide Service and Maintain Liaison with Members of the Community	Provide Service to and Maintain Liaison with Members of the Community	Provide Service to and Maintain Liaison with Members of the Community	Work with Members of the Community
G-9	Cooperate with State and Local Educators	Cooperate with State and Local Educators	Cooperate with State and Local Educators	Work with State and Local Educators
G-10	Obtain Feedback from Community and School Concerning the Vocational Education Programs	Obtain Feedback from the School and Community Concerning the Vocational Education Program	Obtain Feedback from the School and Community Concerning the Vocational Education Program	Obtain Feedback about Your Vocational Program

Associated Performance Elements

G-1	236-239	236-239	236-239	236-239, 248
G-2	240, 246	240, 246	240, 246	240, 246
G-3	241	241	241	241
G-4	242	242	242	242
G-5	243	243	243	243
G-6	244, 245	244, 245	244, 245	244, 245
G-7	247	247	247	247
G-8	249-256	249-256	249-256	249-256
G-9	257, 258, 267-269	257, 258, 267-269	257, 258, 267-269	257, 258, 267-269
G-10	259-266	259-266	259-266	259-266

Category H:
Student Vocational Organization

H-1	Establish a Student Vocational Organization	Establish a Student Vocational Organization	Develop a Personal Philosophy of a Student Organization in Vocational Education	Develop a Personal Philosophy Concerning Student Vocational Organizations
H-2	Acquaint and Orient Prospective Members and Their Parents with the Student Vocational Organization	Acquaint and Orient Prospective Members and Their Parents with the Student Vocational Organization	Establish a Student Organization in Vocational Education	Establish a Student Vocational Organization
H-3	Direct the Initial Activities of the Student Vocational Organization	Direct Initial Activities of the Student Vocational Organization	Prepare Students for Leadership Roles in the Student Vocational Organization	Prepare Student Vocational Organization Members for Leadership Roles

H-4	Conduct a Leadership Training Session for the Officers of the Student Vocational Organization	Conduct a Leadership Training Session for the Officers of the Student Vocational Organization	Assist Students in Developing and Financing a Yearly Program of Activities	Assist Students in Developing and Financing a Yearly Program of Activities
H-5	Assist Students in Developing a Yearly Program of Work	Assist Students in Developing a Yearly Program of Work for the Student Vocational Organization	Supervise Activities of the Student Vocational Organization	Supervise Activities of the Student Vocational Organization
H-6	Assist Students in Advancing within the Available Degrees in the Student Vocational Organization	Assist Students in Advancing within the Available Degrees in the Student Vocational Organization	Provide Learning Experiences for Vocational Students through Contests	Guide Participation in Student Vocational Organization Contests
H-7	Supervise the Activities of the Local School Vocational Organization	Supervise the Activities of the Local School Vocational Organization		
H-8	Assist Students in Publicizing the Activities of the Student Vocational Organization	Assist Students in Publicizing the Activities of the Student Vocational Organization		
H-9	Advise and Assist Students with Fund Raising	Advise and Assist Students with Fund Raising and Financial Management		
H-10	Maintain a File of Publications Available for the Student Vocational Organization	Maintain a File of Publications Available for the Student Vocational Organization		
H-11	Supervise the Development of an Annual Handbook for the Student Vocational Organization	Supervise the Development of an Annual Handbook for the Student Vocational Organization		
H-12	Supervise the Development of a Chapter Scrapbook for the Student Vocational Organization	Supervise the Development of a Chapter Scrapbook for the Student Vocational Organization		
H-13	Evaluate the Student Vocational Organization	Evaluate the Student Vocational Organization		
H-14	Assist in the Preparation of State and National Reports for the Student Vocational Organization			

H-15	Supervise Student Participation in Activities of the Student Organization on the District, State and National Levels	Supervise Student Participation in Activities of the Student Organization on the District, State and National Levels
H-16	Guide, Plan, Develop and Participate in the Activities of the District, State, Regional, and National Student Vocational Organizations	Assist with District, State, Regional and National Student Vocational Organization Contests

Associated Performance Elements

H-1	270, 271, 273-275	270, 271, 273-275	270	270
H-2	272, 277	272, 277	270-275, 277, 280, 292	270-275, 277, 280, 292
H-3	276, 278, 292	276, 278, 292, 293	276, 278, 279, 282, 295	276, 278, 279, 282, 295
H-4	279	279	281, 286, 287, 289	281, 286, 287, 289
H-5	280, 281, 284.1	280, 281, 284.1	285, 288, 290, 291, 298	283-285, 288, 290, 291, 293, 298
H-6	282	282	294-297	294-297
H-7	283, 284.2	283, 284.2		
H-8	285	285		
H-9	286, 287	286, 287		
H-10	288	288		
H-11	289	289		
H-12	290	290		
H-13	291, 284.3	291, 284.3		
H-14	293			
H-15	294, 295	294, 295		
H-16	296-298	296-298		

Category I:
Professional Role and Development

I-1	Keep Up-to-Date Professionally	Keep Up-to-Date in Your Profession and in Your Occupational Specialty	Keep Up-to-Date in Your Profession and in Your Occupational Specialty	Keep Up to Date Professionally
I-2	Serve the Profession	Serve the Profession	Serve the Profession	Serve Your Teaching Profession
I-3	Develop Personal Professional Philosophy and Ethical Standards	Establish and Maintain a Personal Professional Philosophy and Ethical Standards	Establish and Maintain a Personal Professional Philosophy and Ethical Standards	Develop an Active Personal Philosophy of Education
I-4	Serve the School and Community	Serve the School and Community	Serve the School and Community	Serve the School and Community
I-5	Evaluate and Improve Personal and Professional Abilities	Select, Obtain and Maintain a Job in Keeping with Your Professional Qualifications	Select, Obtain and Maintain a Job in Keeping with Your Professional Qualifications	Obtain a Suitable Teaching Position
I-6	Provide Experiences for Potential Teachers	Plan and Provide Laboratory Experiences for Prospective Teachers	Plan and Provide Laboratory Experiences for Prospective Teachers	Provide Laboratory Experiences for Prospective Teachers
I-7	Plan the Student Teaching Experience	Plan the Student Teaching Experience	Plan the Student Teaching Experience	Plan the Student Teaching Experience
I-8	Supervise Student Teachers	Supervise Student Teachers	Supervise Student Teachers	Supervise Student Teachers

Associated Performance Elements

I-1	299, 304, 318, 319	299, 304, 318, 319	299, 304, 318, 319	299, 304, 318, 319
I-2	300, 305-309	300, 305-309	300, 305-309	300, 305-309
I-3	301-303	301-303	301-303	301-303
I-4	310-312, 321, 322	310-312, 321, 322	310-312, 321, 322	310-312, 321, 322
I-5	313-317, 320	313-317, 320	313-317, 320	313-317, 320
I-6	323, 325	323, 325	323, 325	323, 325
I-7	324, 326, 330	324-326, 330	324-326, 330	324-326, 330
I-8	327-329	327 [illegible]	327-329	327-329

Category J:
Coordination of Cooperative Education

J-1	Establish Criteria for Selecting Student Learners	Establish Criteria for Initiating a Cooperative Program	Establish Criteria and Guidelines for Initiating a Cooperative Vocational Education Program	Establish Guidelines for Your Cooperative Vocational Program
J-2	Gather Data for Selecting Student Learners	Identify and Enroll Prospective Student-Learners on the Basis of Selection Criteria and Data	Establish and Apply Policies for Managing Student Attendance, Transfers and Terminations	Manage the Attendance, Transfers, and Terminations of Co-Op Students
J-3	Select Student Learners	Identify and Secure Prospective Training Stations on the Basis of Selection Criteria and Data	Identify and Enroll Prospective Students	Enroll Students in Your Co-Op Program
J-4	Place Student Learners on the Job	Place Student-Learners on the Job	Identify and Secure Prospective Training Stations	Secure Training Stations for Your Co-Op Program
J-5	Establish Criteria for Selecting Training Stations		Develop Training Agreements and Training Plans for Placing Students on the Job	Place Co-Op Students on the Job
J-6	Select and Secure Training Stations		Develop the Training Ability of On-the-Job Instructors	Develop the Training Ability of On-the-Job Instructors
J-7	Assist Employer in Providing a Training Station	Assist Employers in Meeting the Legal Requirements of a Training Station	Coordinate and Supervise On-the-Job Instruction	Coordinate On-the-Job Instruction
J-8	Assist Student Learners and Employers in Obtaining Reimbursement	Assist Student-Learners and Employers in Obtaining Reimbursement	Evaluate Students on the Job	Evaluate Co-Op Students' On-the-Job Performance
J-9	Assist Student Learners in Preparing for Job Interviews and Job Orientation		Plan and Conduct Related Instruction	Prepare for Students' Related Instruction
J-10	Assist On-the-Job Instructors in Accepting the Educator's Role	Assist Training Station Personnel in Becoming More Effective Educators	Conduct an Employer-Employee Appreciation Event	Supervise an Employer-Employee Appreciation Event
J-11	Supervise On-the-Job Training	Supervise On-the-Job Instruction		
J-12	Plan for Supervising the On-the-Job Instruction	Supervise On-the-Job Instruction		
J-13	Manage Student Learners	Manage Student-Learner Absenteeism, Transfers and Termination in the Cooperative Vocational Education Program		

J-14	Plan and Sponsor an Employee-Employer Appreciation Event	Conduct an Employer-Employee Appreciation Event		
J-15	Evaluate Students' On-the-Job Development	Evaluate Students' On-the-Job Progress		
J-16	Improve Related Instruction	Maintain Effective Related Instruction in Your Cooperative Vocational Education Program		
J-17	Improve On-the-Job Training	Improve On-the-Job Instruction		

Associated Performance Elements

J-1	331	331, 339, 341	331, 339, 341, 354-356	331, 339, 341, 354-356
J-2	332-335	332-336	370-372	370-372
J-3	336-337	337.1, 340, 342-345	332-336	332-336
J-4	338, 347-350	337.2, 337.3, 337.4, 338, 346, 347-350, 357	337, 340, 342-345	337, 340, 342-345
J-5	339, 341		337, 338, 346-353, 357	337, 338, 346-353, 357
J-6	340, 342-345		359, 360, 365, 380-382	359, 360, 365, 380-382
J-7	346, 351-353	351-353	358, 361-364, 366-369	358, 361-364, 366-369
J-8	354-356	354-356	374, 378	374, 378
J-9	357, 358		379, 383, 384	379, 383, 384
J-10	359, 360, 365	359, 360, 365	373	373
J-11	361, 364, 366-369	362.1, 362.2, 362.3, 363		
J-12	362, 363	358, 361, 362.4, 362.5, 362.6, 364, 366-369		
J-13	370-372	370-372		
J-14	373	373		
J-15	374-378	374-378		
J-16	379, 383, 384	379, 383, 384		
J-17	380-382	380-382		